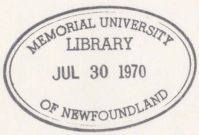
AN ANALYSIS OF THE LABOUR SUPPLY DATA TO TEST THE PLAUSIBILITY OF THE APPLICATION THE LEWIS GROWTH MODEL IN NEWFOUNDLAND

SELWYN JOHN KLETZ, B.COM (P.E.)



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ABSTRACT

The purpose of this study is to determine whether the labour supply of Newfoundland meets the requirements of the Lewis Growth Model. The main objective is therefore not to determine whether the policy implications of the Lewis model are relevant to Newfoundland, but to determine whether it can be applied in the province under existing labour supply conditions. The introduction is used to define the concepts which are used, to outline the scope of the thesis, and to briefly summarize and criticize the Lewis model. Chapter II analyses the quantitative aspects of the Newfoundland labour supply, while chapter III is used to inquire into the qualitative aspects of the labour supply. The task set in chapter IV is to determine whether a surplus labour force does exist in the province, whether the wage rates are indeed low, and whether the productivity of labour has risen during the past few years.

The general conclusion is that the labour supply of Newfoundland does meet the requirements of the Lewis Growth Model, for neither the quantitative nor the qualitative aspects of the labour supply contradict the groundrules of the model. However, a brief analyses of the model itself, in the appendix, points to a few shortcomings of the model, and there-

fore to the inadvisability of applying the model to Newfoundland.

ACKNOWLEDGEMENTS

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This thesis would not have been possible without the warm co-operation and courtesies extended by the many officials - notably Mr. A. Bannister of the Department of Labour, Government of Newfoundland and Labrador - contacted in the course of the research. While their comments form the basis of certain parts of this thesis, the author takes full responsibility for all statements contained herein.

Thanks are also due to my wife, Carol Ann Kletz, for her patience and critical commentary on my literary abilities.

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TABLES

GRAPHS

CHAPTER I: INTRODUCTION

The purpose of this thesis is to determine whether the Newfoundland labour supply meets the requirements of the Lewis Growth Model.[1] Many concepts in the original model will have to be modified to suit circumstances in Newfoundland, and for this purpose it is necessary to define some of the terms used.

Definitions

The labour force is defined by the Dominion Bureau of Statistics in the 1961 Census as: "All persons, 15 years of age and over, who were either reported as having a job of any kind, either part-time or full-time (even if they were not at work) or were reported as looking for work, during the week prior to enumeration".[2] Essentially the labour force consists of all people, over 14 years of age, who were willing to work under prevailing wages. This definition has only the dimension of quantity, and is extended in this thesis to include the dimensions of quality, geographic distribution, age distribution, and the willingness to seek employment, i.e. the participation rate. The quality of the labour force will include educational attainment, productivity, mobility, and the

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1 W. Arthur Lewis, Economic Development with Unlimited Supplies of Labour, in The Manchester School of Economic and Social Studies, Volume 22, 1954, page 139.

2 1961 Census of Canada, Labour Force, D.B.S. 94-551, page iv. The week prior to enumeration is the first week in June.

various habits peculiar to labourers in Newfoundland.

Lewis does not give an explicit definition of labour supply, although he does suggest the sources of labour to facilitate economic development in his model. A discussion of labour supply first requires a definition of the term, and the following is therefore suggested: The supply of labour includes all persons in the labour force, as well as all persons not in the labour force, 15 years of age and over, who are not prevented from being employed or seeking employment because of mental or physical disabilities. The labour supply in an economy is therefore the potential labour force of that economy.

The definition of economic development includes the following conditions: First, that the per capita gross domestic product should rise. Second, that the resources of the economy should be shifted to those industries which have the greatest growth potential, and which are likely to make the most effective use of those resources. The term 'resources' refers to all factors of production. Third, that those industries, from which resources have shifted, should become more productive in order to support a shift of resources. Fourth, that the labour supply in the economy should become more educated and more ambitious.

The second condition in the definition of economic development does not specify which industries have the greatest growth potential, and which are likely to make the most effect-

ive use of available resources. Although Lewis does not specifically state it, it will be contended throughout the thesis that the development of an economy should be based on the secondary sector, although the ultimate aim should be a balanced growth of all sectors. There are arguments in favour of basing economic development on the primary sector;[3] however, it may be argued that such development inevitably leads to a depletion of the financial resources in the economy because of the importation of capital items, as well as laying the economy open to fluctuations in world demand for food and raw materials. The factors of production in the secondary sector are more adaptable than those in the primary sector, as they lend themselves to alternative uses with greater ease. An economy which is dependent on its resource-based industries is limited to the available resources, and must therefore import processed goods. A balance should be the goal, in which all the sectors of the economy are developed, so as to be assured of the strongest possible forward and backward linkages. This is attained through the development of the secondary and tertiary sectors, while causing labour in the primary sector to become more productive through capital intensification.

Value added will be used to measure the growth of production of individual industries in the economy of Newfound-

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3 Gustav F. Papanek, "Arguments for Development of Agriculture", in G. M. Meier (ed.), Leading Issues in Development Economics, Oxford University Press, New York, 1964, page 289.

land, and for this purpose the definition of the Dominion Bureau of Statistics will be used. "Value added is compiled by deducting the cost of materials, fuel and electricity consumed from the value of production (value of shipments adjusted for changes in the value of inventories of finished goods and goods in process)."[4] Value added is therefore the net value of production i.e. the market value minus the cost of the manufacturing inputs which are not generated within the industry. It therefore includes profits, labour costs, and any other costs which are generated within the industry.

Productivity of labour is an elusive concept, as it is extremely difficult to pinpoint the increase in production which is directly attributed to the increased productivity of labour. In this thesis the criterion will be value added per man-hour. This approach does not seperate the additional productivity which is attributed to technologically improved capital from the increased productivity of labour, but is used because of the lack of adequate data.

The above are the most relevant definitions in the thesis, and we may now turn to the scope of the thesis.

Scope of the Thesis

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4 General Review of the Manufacturing Industries of Canada, 1961, D. B. S. 31-201, page 8.

Scope of the Thesis

The objective of the thesis is to inquire whether the labour supply in Newfoundland meets the requirements of the Lewis Growth Model. The model will therefore be summarized and briefly criticized before its applicability in Newfoundland is tested.

The definition of labour supply which will be used includes the dimension of quality as well as quantity, so that both will be analysed in the context of the Lewis model. Chapter II will analyse the many aspects influencing the quantity of labour, such as population trends, migration trends, participation rates, governmental policies, and seasonal and cyclical phenomena. In many respects the model will have to be modified in order to account for circumstances in Newfoundland.

The qualitative dimensions of the labour supply will be analysed in chapter III. The model will be modified to include a number of influences which affect the productivity of labour in the province. These include customs and institutions, education, age distribution, and governmental policies.

Chapter IV will be used to test the plausibility of the application of the Lewis Growth Model, and will inquire whether a labour surplus does exist in the province, whether the productivity of labour has risen during the past few years, and wages are indeed low.

If, with modifications, the labour supply in Newfoundland meets the requirements of the Lewis model, then it will be considered applicable to the province. The validity of the model does not fall within the scope of the thesis, but will be discussed briefly in the appendix.

The Lewis Growth Model - A Summary

In order to pave the way for his model, Lewis made the following assumptions: The economy has an unlimited supply of labour relative to its capital and natural resources; because of the unlimited supply of labour, marginal productivity of labour is negligible, zero, or negative - there is 'disguised unemployment'; the economy is closed. For his section concerning the financing of capital formation through credit, Lewis further assumes that "the surplus labour cannot be used to make consumer goods without using up more land and capital, but can be used to make capital goods without using any scarce factors."[5]

The model is disaggregated into two sectors, industry and agriculture. Each sector has two factors: land and labour in the agricultural sector, and capital and labour in the industrial sector. Labour is redundant in the agricultural sector according to assumptions made, so that the movement of one unit of labour from agriculture would leave total output

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5 Lewis, page 161.

virtually unaffected. Labour cannot be paid according to its marginal productivity in the agricultural sector, as it is too low; wages in this sector are therefore at a subsistence level, but above the marginal productivity, and the difference is in effect contributed out of the average productivity of labour.

The level of employment in the industrial sector is determined by demand for labour, which is determined by the availability of capital, changes in technology, and the demand for industrial products. The level of wages in the industrial sector is not determined by the demand for labour, but by the infinitely elastic supply of labour, at a price which may be higher than the subsistence level in the agricultural sector. The difference in the two wage levels compensates for the higher costs of urban life, and entices labour to move to the industrial sector.

An increase in the demand for labour in the industrial sector should cause the supply to be forthcoming from the following sources: farmers, casual labourers, petty traders, retainers, women in households, and population growth. Each has a low marginal productivity. The sources of the supply of labour do not play a large role in the Lewis model, as the prime requirement is merely that the supply should be unlimited. Although there is more than one source of supply of labour, it appears to be assumed that the major source is the agricultural sector.

The supply of labour is not only unlimited, but is also likely to be unskilled. The lack of skills could cause a bottleneck in expansion, but Lewis regards it as a "quasi-bottleneck". Lewis maintains that "it is only a very temporary bottleneck, in the sense that if the capital is available for development, the capitalists or their government will soon provide the facilities for training more skilled people."[6] The real bottlenecks in the model are therefore capital and natural resources, as the necessary skills will be provided, with a time lag, as long as capital and natural resources are available. Entrepreneurship, adequate for a rapid rate of growth is not mentioned, but obviously implied.

Suppose a disturbance occurs in the industrial sector of the economy. This could be caused by an increase in demand for the products of that sector, a technological change which increases industrial efficiency, or new capital made available from outside the system. The disturbance should cause an increase in the demand for labour. Because the supply of labour is unlimited, wage rates in this sector do not rise; instead, the increased demand for labour results in higher profits. Figure 1-1 shows the impact of a change in the demand for labour on profits[7].

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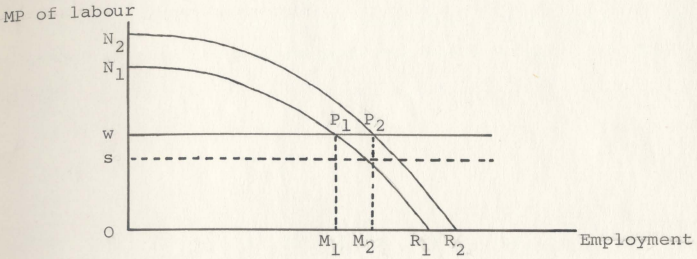
6 Lewis, page 145.
7 Lewis, page 152.

Figure 1-1

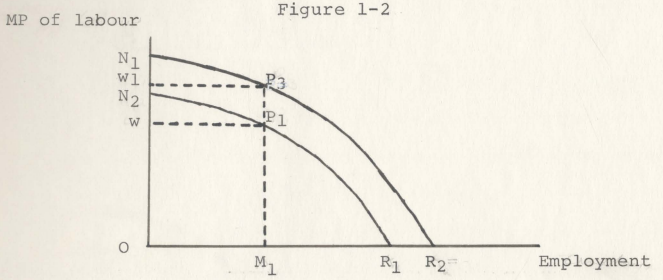


The vertical axis measures the marginal productivity of labour, and the horizontal axis measures the quantity of labour employed. The quantity of capital has a direct effect on the output per head; an addition to the stock of capital, i.e. reproducible capital, will increase the output per head. Ow is the current wage in the industrial sector, and will remain constant as long as the supply of labour is completely elastic i.e. unlimited. Assume an initial position in which the quantity of capital is fixed at a level where the marginal productivity of labour is represented by curve $N_1 R_1$, and the number employed is OM_1. If the marginal productivity of labour outside the industrial sector is zero, OR_1 ought to be employed; but wages are higher than the marginal productivity of labour outside the industrial sector i.e. in the agricultural sector, and entrepreneurs must therefore pay a higher wage rate in order to entice labour from the agricultural sector. OwP_1M_1

is paid in wages to workers in the industrial sector, and profits are therefore wN_1P_1. A disturbance in this sector causes the stock of capital to be increased, more labour to be employed at the current wage Ow, and the marginal productivity of labour to rise to ON_2 from ON_1. The total wage bill rises to OwP_2M_2, and profits increase to wN_2P_2.

If the supply of labour were completely inelastic, an increase in the stock of capital would increase the marginal productivity of labour, but would also increase the current wage, and cause employment to remain constant. Figure 1-2 shows the impact of a change in the stock of capital on profits, wages, and the marginal productivity of labour. The increase in the stock of capital causes the marginal productivity of labour to increase from ON_1 to ON_2 (see figure 1-2). Because the supply of labour has a zero elasticity, the wage rate rises from Ow to Ow_1.

Figure 1-2



The number of labourers employed do not increase because of the inelasticity of supply, and the wage bill rises

from OwP_1M_1 to $Ow_1P_3M_1$. Profits were wN_1P_1 before the increase in capital, and are wN_2P_3 after this increase. If the slope of the curve remains the same following an increase in capital stock, then profits are likely to remain constant. The more elastic the supply of labour, the greater the growth of absolute profits over time.

With an unlimited supply of labour, a disturbance in the industrial sector should cause an increase in employment of labour and an increase in profits. Wages are spent on consumption, but profits are saved and reinvested. The reinvestment of profits once again increases the stock of capital, the marginal productivity of labour, employment and profits. The growth process continues as long as the supply of labour is unlimited, and the wage rate remains constant. The function of a constant, low wage level is to accelerate economic development. As long as labour is redundant in the agricultural sector and available to the industrial sector, the process can continue.

Lewis suggested that it is impossible to distinguish between the growth of capital and the growth of technical knowledge. "Growth of technical knowledge outside the industrial sector would be fundamentally important, since it would reduce the level of wages, and so reduce the capitalist surplus. But inside the capitalist (industrial) sector, knowledge and capital work in the same direction, to raise the surplus and to increase employment. The application of new technical know-

ledge usually requires new investment, and whether the new knowledge is capital-saving (and thus equivalent to an increase in capital) or labour saving (and thus equivalent to an increase in the marginal productivity of labour) makes no difference to our diagram. ..... Accordingly, in this analysis the growth of productive capital and the growth of technical knowledge are treated as a single phenomenon."[8]

What generates growth in the Lewis model is that the distribution of incomes is altered in favour of people who usually do most of the saving. Practically all the saving is done by people who receive profits or rent, and if profits increase faster than the national income, it may be taken for granted that saving is increasing faster than the national income.

Keeping in mind the assumption of a zero marginal productivity of labour, then by definition, the subsistence wage remains constant throughout the expansion, since labour will be forthcoming from the agricultural sector without reducing the subsistence output in that sector. The surplus in the industrial sector should therefore increase faster than the national income. All that the workers gain from the expansion is that more of them are employed at a wage above the subsistence wage, because the wage level is constant. It is through

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8 Lewis, page 152.

this inequality that capital formation is possible.

In the model so far, capital is created only out of profits earned. However, in practice there are other methods of financing capital formation. One such method is an increase in the supply of money through the creation of credit. The creation of credit will increase the stock of caital, raise output, and raise employment in the same way as would capital financed out of profits. The difference is in the immediate effects of capital formation on prices and on the distribution of output. Because capital formation, through credit financing, is not immediately followed by a rise in output, the swollen stream of new money in the economy causes prices to rise. At the same time the fixed amount of consumer goods is redistributed to the newly employed workers, in the industrial sector. According to the assumption that surplus labour can be used to make capital goods without using any scarce factors, capital formation is not likely to cause a decrease in consumer goods output. Credit creation therefore leads to a forced redistribution of consumption, but not to forced savings. Lewis suggests that the inflationary process continues until voluntary savings have increased to a level where they are equal to the inflated level of investment. As saving is a function of profits, the inflation will continue until profits increase so much relative to the national income that entrepreneurs can now finance the higher rate of investment out of their profits, without further recourse to monetary expansion. Equilibrium is

again restored. Some classes suffer because of the inflation, specially farmers, but Lewis regards this process as only temporary, as inflation for the purpose of capital formation is self-destructive. Prices begin to rise, but are eventually overtaken by rising output, and may eventually end up lower than they were in the beginning.

We resume the analysis. When there is no longer a labour surplus the process must stop. The labour surplus need not, however, disappear in order to cause the process to stop; there may still be a labour surplus, but real wages may rise so high as to reduce profits to the level at which theses profits are reduced to a rate at which investment is no longer forthcoming.

This may happen for any of four reasons: Firstly, capital accumulation may proceed at a faster rate than population growth, and therefore reduce the number of people in the agricultural sector. Because there are fewer mouths to feed in the agricultural sector, average product per man rises. This influences a rise in the wage level in the industrial sector. Secondly, the increase in size of the industrial sector may turn the terms of trade in favour of the agricultural sector, and cause entrepreneurs in the industrial sector to pay their labourers a higher money wage in order to maintain their real incomes. Thirdly, the agricultural sector may begin to imitate the methods of the industrial sector i.e. apply new and better techniques of production. A rise in the productivity

of labour in the agricultural sector may raise real incomes in the industrial sector, and therefore reduce the industrial surplus and rate of capital accumulation, unless the terms of trade move against the agricultural sector.[9] Fourthly, the workers in the industrial sector may develop a taste for a more sophisticated and expensive way of life. They may therefore need higher incomes, and attain an increase in wages through trade union pressure. Because of the unlimited supply of labour, trade union pressure does not appear to be plausible.

When the capital accumulation catches up to the labour supply, wages rise above the subsistence level, and profits are adversely affected. In order to continue the development process, Lewis abandons the assumption of a closed economy. Because other countries have surplus labour, the adverse effects on profits can be avoided by encouraging immigration or by exporting capital to countries where there are labour surpluses, and where wages are at subsistence levels.

The immigration of skilled workers could reduce the demand for the services of native unskilled workers, but this is unlikely, as skilled workers will probably facilitate new investment in industries which could not be established before, and this will lead to an increase in demand for labour.

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9 Lewis, page 172.

Immigration of a few unskilled workers will have little effect on the economy, as the wages of these immigrants will be pulled up to the level of wages in the economy. On the otherhand, mass immigration might cause a different reaction. It could cause the general wage level to be depressed to the extent where the difference between the new wage and the old will be just sufficient to encourage immigration. This might cause the development process to continue once again.

The exporting of capital has a similar effect. It reduces the creation of fixed capital in the exporting economy, and therefore reduces the demand for labour. Labour will be required to create capital for exporting, but will not be required to work with the capital to produce products for domestic consumption. This will prevent wages from rising as much as they would have, had capital not been exported. If, on the otherhand, the exported capital is used to cheapen the goods which the capital exporting country imports, then real wages in the capital exporting country will not be reduced, to the detriment of further economic development.

Critical Commentary on the Lewis Growth Model

Lewis excluded the influences of fluctuation in world prices on the development of an economy by assuming that an economy may be closed. There is little to doubt the convenience of such an assumption - only its practicality, as no economy is ever closed in the true sense of the word. The

limitation of specific natural resources must necessarily cause trade to take place. The only assumption that may be made in this respect, is that the government of the developing economy uses its initiative to restrict the importation of those goods which are likely to retard development.

It was assumed in the model that surplus labour cannot be used to make consumer goods without using up more land or capital, but can be used to make capital goods without using any scarce factors of production.[10] The first part of the assumption may be valid, but the second part appears to be too rigid. If capital items could be manufactured without the use of scarce factors of production, then the manufacture of those items would be undertaken by all underdeveloped economies; but this is not the case, as it is the lack of capital items which is the major problem in almost all developing economies today. The importation of capital items is one of the major reasons why so many economies are so poor, and why their debts to developed capital exporting economies tend to rise annually.

The lack of skilled labour in the industrial sector was regarded as a 'quasi-bottleneck' of a temporary nature.[11] Although the lack of skilled labour may be of a temporary nature,

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10 Lewis, page 161.
11 Lewis, page 145.

it is not a 'quasi-bottleneck'. This lack is felt most of all in the initial stages of development. But in the initial stages of development firms have not yet had time to develop and finance training programs, and the government has not yet gained sufficient taxes to finance large-scale educational programs. This again presents the problems of a closed economy, as the only means of financing a large-scale educational program is by borrowing money from foreign banks.

Lewis defined the subsistence sector as that sector which does not use reproducible capital.[12] Although this is theoretically possible, it is improbable. Assume that the subsistence sector is the agricultural sector; one of the most common tools used in underdeveloped agricultural economies is the wooden plough, but a wooden plough is a reproducible capital item. It may therefore be said that the types of reproducible capital used in the subsistence sector are unsophisticated and insufficient in quantity, but not that reproducible capital is not used. The subsistence sector may therefore be defined as that sector in the economy in which unsophisticated methods of production are used, and in which there are too many labourers in relation to the amount of factors of production.

Another assumption of the Lewis model is that wages do not rise while there is still a surplus supply of labour.

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12 Lewis, page 147.

This implies that the wage bill in the industrial sector rises in proportion to the increase in the number of persons employed. But development is synonymous with an improvement in the quality of the labour force, i.e. a greater proportion of the labour force is likely to attain higher levels of education, and therefore likely to earn higher wages and salaries. This implies that the wage bill in the industrial sector will rise at a faster rate than the increase in the number of persons employed, and conflicts with the Lewis assumption.

The crux of the model is that profits are reinvested, and that this reinvestment is one of the underlying causes for the growth of the industrial sector. This need not be unfounded, but in the initial stages of development entrepreneurship is likely to come from abroad, and it is not uncommon for foreign entrepreneurs to make their profits and then return to their homelands, leaving the developing economies in the same plight as before. "Foreign exploitation" is not simply a catchcall used by underdeveloped countries, it is often a reality.

Lewis apparently assumes that the agricultural sector is sufficiently commercialized to facilitate the migration of labour to the industrial sector, i.e. that the labour in the industrial sector can buy the food which it once produced. But a subsistence sector normally proudces for personal consumption, and the farmers are not inclined to produce for the market during the earlier stages of migration. It is therefore possible that a depletion of the labour surplus from the agri-

cultural sector may cause farmers and their offspring to eat more, rather than for them to become commercially orientated. The depletion of the labour surplus from "kraals" in Africa, for example, has not necessarily led to the commercialization of the agricultural sectors.[13] Lewis appears to regard the farmers as a mass of unproductive entrepreneurs just waiting for better times i.e. for an increase in the demand for their produce resulting from migration. Commercialization of the agricultural sector is likely to occur only when the demand for the produce of this sector by the industrial labour force is so high that the farmers are forced to take note of the benefits which can be derived from selling their produce at the market.

Although the Lewis growth model concentrates on a surplus labour supply in the agricultural sector, it will be contended that the same arguments can be applied to a surplus labour supply in the fisheries sector in Newfoundland, or for that matter, to any sector which has a surplus labour supply.

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13 A "kraal" is a tribal village in the centre of which is an enclosure for the tribal cattle.

CHAPTER II: THE QUANTITY DIMENSIONS OF THE LABOUR SUPPLY

Population Dynamics

One of the sources of a surplus supply of labour in the Lewis growth model is population growth. Lewis did not explicitly state what the rate of population growth should be, but he gave the impression that for continued development the population should increase at a sufficiently rapid rate to ensure that there would always be a surplus supply of labour, i.e. that wage levels should not rise because of a shortage of labour. In the initial stages of development the rate of population growth is not important, as the supply of labour is 'unlimited' in relation to the quantity of capital available; but as the unlimited (or surplus) supply of labour is absorbed into the industrial sector of the economy, the rate of population growth must reach a level that will ensure a continued surplus supply of labour. Thus

> "the process must stop when capital accumulation has caught up with population, so that there is no longer surplus labour".[1]

Population growth is determined by the following three variables: the birth rate, the death rate, and net immi-

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1 Lewis, page 172.

gration. The death rate and net immigration have an immediate effect on the supply of labour, with the exceptions of persons dying before the age of 15 years, and of immigrants below that age. The birth rate, on the otherhand, has a lagged effect on the labour supply, and must reach an adequate level 15 years before the need for that level is felt in the economy.

The Birth Rate

There is no accurate way of determining what the required birth rate should be in order to ensure a continuing surplus supply of labour. Assume that the rate of capital accumulation can be predicted, and that it is concluded that in exactly 15 years the last of the surplus supply of labour will be absorbed into the productive processes of the economy. Assume further that the annual rate of capital accumulation after 15 years could be predicted, and that this rate will be x percent per year; the required rate of population growth will then supposedly have to increase by x percent per year. But capital is likely to be far more advanced technologically in 15 years, and may require less labour per unit. The required rate of population growth may then be (x-y) percent (y is an arbitary figure). If it could be predicted that the required rate of growth of population will be x percent, further predictions will have to be made concerning the death rate and immigration in order to determine the required birth rate for the

present. It may be safely predicted that the death rate will decline[2], and that development will attract more immigrants, but neither the decline in the death rate nor the increase in immigration can be accurately predicted. Because of these difficulties, no forecasts will be made concerning the birth rate, death rate, or immigration; instead, past trends of the birth rate in Newfoundland will be analysed in relation to the labour supply and labour force.

Table 2-1 shows that the birth rate in Newfoundland followed no specific trend between 1949 and 1963, and then declined annually between 1964 and 1967. It is still too early to correlate the changes in the birth rate with changes in the labour supply or the labour force, although it may be predicted that 15 years after 1964 the increase in the labour supply will begin to decline unless the death rate decreases in proportion to the decrease in the birth rate, or unless immigration increases sufficiently.

Assume that the increase in the labour supply does slow down; this need not imply that the process of development will be brought to a halt, as it is quite possible that the types of capital equipment used in 15 years will require less labour per unit of equipment because of labour saving innovations. This need not be considered a flaw in the Lewis model,

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2 Reasons for this assumption will be dealt with under the heading: "The Death Rate".

as the model merely requires that there should always be a surplus labour supply in order to maintain a development process; the model may therefore be extended to include the likelihood of such a possibility. It may therefore be concluded that the decline in the birth rate in Newfoundland since 1964 does not detract from the plausibility of the application of the model in the province.

The birth rate may depend on the stage of development of an economy. It is possible that the birth rate will rise during the initial stages of development, and then decline thereafter. The initial rise in the birth rate could be because the population is not yet accustomed to an increase in the wage bill, and therefore correlates this increase with the ability to afford more children. Further development could bring about the sophistication of the population, and cause the additional incomes to be spent on luxuries. This is possibly what happened in Newfoundland, and according to the Lewis model, the decline in the birth rate could ultimately retard development in the province.

The Death Rate

Table 2-1 shows that between 1949 and 1967 the death rate declined by 25 percent in Newfoundland. In absolute terms this does not contribute greatly to labour supply, as the death rate amounted to only a quarter of the birth rate in 1949 and

TABLE 2-1

BIRTH RATES AND DEATH RATES

NEWFOUNDLAND AND CANADA

(Rate per thousand of population)

	CANADA	NEWFOUNDLAND	
	Birth Rate	Birth Rate	Death Rate
1949	27.3	35.6	8.3
1950	27.1	37.5	9.0
1951	27.2	32.5	8.3
1952	27.9	33.6	7.4
1953	28.1	33.4	7.1
1954	28.5	34.6	7.4
1955	28.2	36.3	7.9
1956	28.0	35.0	7.4
1957	28.2	36.1	7.5
1958	27.5	34.3	7.2
1959	27.4	33.6	7.2
1960	26.8	33.9	6.7
1961	26.1	34.1	6.6
1962	25.3	32.2	6.8
1963	24.6	32.4	6.7
1964	23.5	30.4	6.3
1965	21.3	30.2	6.6
1966	19.4	28.5	6.2
1967	18.2	25.7	6.2

Source: Vital Statistics, D.B.S. 84-201

1967, but nevertheless, a decline in the death rate is a desirable trend for the further development of the economy in the context of the Lewis model.

The Lewis model does not take into account the effects of development on the population of the economy, and could be extended to account for this. An example of this is the effect of development on the death rate. Although a decline in the death rate is a determinant of the growth of the labour supply, and therefore an indirect influence on development, economic development is also a determinant of the death rate. Development leads to a public awareness of the lack of health facilities in the economy, and therefore causes public authorities to invest part of the additional income generated by development in hospitals etc., and promotes a decline in the death rate.

Net Immigration

A limitation of the Lewis Growth Model is the assumption of a closed economy, as it does not allow for immigration and emigration. The model will therefore have to be modified to include the possibility of migration. Immigration presents no problem to the model, as it is a cause of population growth, and may therefore increase the prospects of economic development. Emigration, on the otherhand, has the opposite effect, as it decreases the surplus supply of labour in the economy. Thus

> "a vicious circle is created whereby emigration causes underdevelopment, which in turn leads to further emigration." [3]

The statement of J. F. Meenan in his analysis of the past emigration trends in Ireland aptly describes the dangers of emigration in underdeveloped economies. Newfoundland faces this problem, as the emigrants by far exceed the number of immigrants, and they are amongst the most productive individuals in the economy i.e. between the ages of 20 and 34 years. More often than not, these emigrants are from the urban industrial areas, and therefore likely to be the more skilled residents of the province.

Between 1956 and 1961, 10,672 Newfoundlanders migrated to the rest of Canada. During the same period, however, only 5,999 people migrated from the rest of Canada to Newfoundland. This means a net emigration of 4,673 people, more than half of which, 2,887, were destined for Ontario.[4] The effects of the net emigration between 1956 and 1961 could partially offset the advantages of a surplus supply of labour in Newfoundland, and therefore limit the application of the Lewis Growth Model to the economy of Newfoundland.[5] However, the birth rates in Newfoundland are so high that net emigration would

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3 J. F. Meenan, "Eire", in B. Thomas (ed.), Economics of International Migration, MacMillan and Company, Ltd., London, 1958, Chapter 5.

4 See tables 2-2, 2-3, and 2-4.

5 The proof of the assumption of a surplus labour supply in Newfoundland will be given in chapter IV.

TABLE 2-2

MIGRATION FROM NEWFOUNDLAND 1956-61 TO OTHER PROVINCES IN CANADA, MIGRANTS 5 YEARS OLD AND OVER

	PEI	N.S.	N.B.	Qu.	Ont.	Man.	Sask.	Alb.	B.C.	Y&N*	Total
Males	30	995	392	744	2576	160	91	234	241	28	5,491
5 - 14	-	287	104	177	519	64	19	79	49	3	1,301
15 - 19	-	66	12	42	193	-	5	11	23	-	352
20 - 24	9	132	61	118	565	16	11	16	-	6	934
25 - 29	16	137	56	79	432	17	-	37	43	11	828
30 - 34	5	132	60	110	270	31	16	16	42	3	685
35 - 44	-	135	58	171	377	32	25	65	37	4	904
45 - 64	-	79	41	36	160	-	10	10	36	1	373
65 Plus	-	27	-	11	60	-	5	-	11	-	114
Females	23	939	307	710	2404	153	125	223	270	27	5,181
5 - 14	-	219	71	215	543	50	33	89	71	6	1,297
15 - 19	-	99	34	21	292	5	20	11	6	6	494
20 - 24	-	161	57	113	543	32	5	22	27	3	963
25 - 29	17	131	39	105	265	31	16	10	48	9	671
30 - 34	-	117	26	58	244	15	20	26	26	1	533
35 - 44	6	81	48	151	267	20	10	50	46	2	681
45 - 64	-	93	27	37	195	-	16	10	30	-	408
65 Plus	-	38	5	10	55	-	5	5	16	-	134
Total	53	1934	699	1454	4980	313	216	457	511	55	10,672
5 - 14	-	506	175	392	1062	114	52	168	120	9	2,598
15 - 19	-	165	46	63	485	5	25	22	29	6	846
20 - 24	9	293	118	231	1108	48	16	38	27	9	1,897
25 - 29	33	268	95	184	697	48	16	47	91	20	1,499
30 - 34	5	249	86	168	514	46	36	42	68	4	1,218
35 - 44	6	216	106	322	644	52	35	115	83	6	1,585
45 - 64	-	172	68	73	355	-	26	20	66	1	781
65 Plus	-	65	5	21	115	-	10	5	27	-	248

* Yukon and Northwest Territories.

Source: Calculated from Population Sample, D.B.S. 98-509

TABLE 2-3

MIGRATION TO NEWFOUNDLAND 1956-61 FROM OTHER PROVINCES IN CANADA, MIGRANTS 5 YEARS OLD AND OVER

	PEI	N.S.	N.B.	Qu.	Ont.	Man.	Sask.	Alb.	B.C.	Y & N*	Total
Males	114	707	324	497	1,071	103	41	119	107	25	3,108
5 - 14	26	210	77	158	326	15	15	41	30	-	898
15 - 19	11	37	37	31	31	21	-	5	5	-	178
20 - 24	31	78	41	25	83	11	-	-	16	-	285
25 - 29	5	137	58	78	169	21	5	11	31	5	520
30 - 34	10	72	40	40	158	10	16	16	-	10	372
35 - 44	26	127	56	85	182	20	5	31	20	10	562
45 - 64	5	46	15	75	86	5	-	10	5	-	247
65 plus	-	-	-	5	36	-	-	5	-	-	46
Females	107	618	361	375	1,022	155	36	120	72	25	2,891
5 - 14	46	195	119	98	314	72	5	47	20	15	931
15 - 19	11	43	27	37	21	21	-	5	-	-	165
20 - 24	10	68	42	26	85	10	11	16	5	-	273
25 - 29	-	78	51	57	186	11	5	5	31	-	424
30 - 34	20	102	20	41	142	5	5	11	-	10	356
35 - 44	20	91	71	65	157	21	5	16	16	-	462
45 - 64	-	25	31	35	86	10	5	15	-	-	207
65 plus	-	16	-	16	31	5	-	5	-	-	73
Total	221	1325	685	875	2,093	258	77	239	179	50	5,999
5 - 14	72	405	196	256	640	87	20	88	50	15	1,829
15 - 19	22	80	64	68	52	42	-	10	5	-	343
20 - 24	41	146	83	51	168	21	11	16	21	-	558
25 - 29	5	215	109	135	355	32	10	16	62	5	944
30 - 34	30	174	60	81	300	15	21	27	-	20	728
35 - 44	46	218	127	150	339	41	10	47	36	10	1,024
45 - 64	5	71	46	110	172	15	5	25	5	-	454
65 plus	-	16	-	21	67	5	-	10	-	-	119

* Yukon and Northwest Territories.

Source: Calculated from Population Sample, D.B.S. 98-509.

TABLE 2-4

NET MIGRATION FROM NEWFOUNDLAND 1956-61 TO OTHER PROVINCES IN CANADA, MIGRANTS 5 YEARS OLD AND OVER

	PEI	N.S.	N.B.	Qu.	Ont.	Man.	Sask.	Alb.	B.C.	Y & N*	Total
Males	-84	288	68	247	1,505	57	50	115	134	3	2,383
5 - 14	-26	77	27	19	193	49	4	38	19	3	403
15 - 19	-11	29	-25	11	162	-21	5	6	18	-	174
20 - 24	-22	54	20	93	482	5	11	16	-16	6	649
25 - 29	11	-	- 2	1	263	- 4	- 5	26	12	6	308
30 - 34	- 5	60	20	70	112	21	-	-	42	-7	313
35 - 44	-26	8	2	86	195	12	20	34	17	-6	342
45 - 64	- 5	33	26	-39	74	- 5	10	-	31	1	126
65 plus	-	27	-	6	24	-	5	- 5	11	-	68
Females	-84	321	-54	335	1,382	- 2	89	103	198	2	2,290
5 - 14	-46	24	-48	117	229	-22	28	42	51	-9	366
15 - 19	-11	56	7	-16	271	-16	20	6	6	6	329
20 - 24	-10	93	15	87	458	22	- 6	6	22	3	690
25 - 29	17	53	-12	48	79	20	11	5	17	9	247
30 - 34	-20	15	6	17	102	10	15	15	26	-9	177
35 - 44	-14	-10	-23	86	110	- 1	5	34	30	2	219
45 - 64	-	68	- 4	2	109	-10	11	- 5	30	-	201
65 plus	-	22	5	- 6	24	- 5	5	-	16	-	61
Total	-168	609	14	582	2,887	55	139	218	332	5	4,673
5 - 14	-72	101	-21	136	422	27	32	80	70	-6	769
15 - 19	-22	85	-18	- 5	433	-37	25	12	24	6	503
20 - 24	-32	147	35	180	940	27	5	22	66	9	1,339
25 - 29	28	53	-14	49	342	16	6	31	29	15	555
30 - 34	-25	75	26	87	214	31	15	15	68	-16	490
35 - 44	-40	- 2	-21	172	305	11	25	68	47	-4	561
45 - 64	- 5	101	22	-37	183	-15	21	- 5	61	1	327
65 plus	-	49	5	-	48	- 5	10	- 5	27	-	129

* Yukon and Northwest Territories.

Source: Calculated from Population Sample, D.B.S. 98-509.

have to increase considerably to offset the rate of population growth.

Although it was concluded that the size of the net emigration from Newfoundland was not sufficiently large to offset the gains of population growth in the province, and therefore that the application of the Lewis model is not restricted in Newfoundland because of emigration, this conclusion must be qualified. There are two qualifications: Assume that the majority of the emigrants were above the age of 15 years, and therefore comprised a section of the labour supply in the economy. If the emigrants had been employed, and were highly skilled, then their emigration could have caused the outlay of expenditures to train other labourers to replace them, and therefore cause corporate profits to decline. Secondly, the emigration of skilled labour could have caused companies to raise the level of wages of skilled labourers in order to prevent further emigration.

A limitation of the Lewis model is that he did not attach much importance to the heterogeneity of labour. Although a surplus of labour may exist in an economy, it is quite possible that there may be a shortage of specific types of labour. This aspect will be further dealt with in the next chapter. Fortunately, most emigrants leave the province of Newfoundland because they cannot find employment here, and so long as there is a surplus supply of labour in the economy, their departure is not likely to influence the development of the province by

causing wage levels to rise. There are other qualifications concerning the quality of the labour supply in Newfoundland, but these must be postponed until the next chapter.

Labour Force Participation

A surplus supply of labour does not necessarily imply a surplus labour force. Lewis obviously assumed in his model that a surplus supply of labour (in relation to the available capital resources of the economy) would lead to a surplus labour force. But this assumption disregards the participation rate of the labour supply i.e. ther percentage of the labour supply in the labour force. This does not imply that Lewis' assumption was unrealistic, as people must eat, and in order to do so they must earn a living by joining the labour force. But a number of factors, including seasonal effects and government welfare policies have adverse effects on the participation rates. There are numerous possible causes for low participation rates, and it is quite possible that these could adversely affect the application of the Lewis Growth Model in an economy. The participation rates in Newfoundland will therefore be analysed in order to determine the possible effects on the application of the Lewis model.

Two approaches will be used in this analysis: the first will involve a comparison of the age distribution of the labour supply with the participation rate of specific

age groups. If it is determined that those age groups which have the lowest participation rates comprise the majority of the labour supply, then the conclusion will be that the Lewis Growth Model is limited in its applicability. The second approach will analyse the overall participation rate in Newfoundland in relation to seasonal and cyclical phenomena in the province.

An analysis of tables 2-5 and 2-6 shows that the participation rate of the 15 to 19 year age group of males, and of males and females together, in 1961 was lower than the participation rates of all other age groups up to the age of 64 years. The low participation rate of the 15 to 19 age group could almost certainly be attributed to education in the province, as many of the members of this age group were likely to have been studying. This age group comprised a sizable share of the labour supply in the province (approximately 16%), and their delayed entry into the labour force therefore had an important effect on the size of the labour force. It is quite possible that the delayed entry of this age group into the labour force had no effect on the wage level in the province,i.e. that the 1961 labour force was large enough anyway; but this observation does point to an omission in the Lewis model.

Another omission in the Lewis model concerns the participation rates of females. Table 2-5 shows that the participation rate of females declined considerably after the age of 24 years in Newfoundland. The decline could be attributed

TABLE 2-5

NEWFOUNDLAND LABOUR FORCE PARTICIPATION RATES

1961

Males

Age Group	Pop.15 years and over	%	Labour Force	%	Participation rate
15 years	5,363	3.90	191	0.21	3.56
16-17	9,068	6.59	2,159	2.40	23.80
18-19	7,510	5.46	4,472	4.98	59.54
15-19	21,941	15.94	6,822	7.59	31.09
20-24	15,288	11.11	12,082	13.45	79.02
25-34	27,332	19.86	22,896	25.49	83.76
35-44	25,814	18.75	21,267	23.67	82.38
45-54	20,983	15.24	16,305	18.15	77.70
55-64	12,734	9.25	8,285	9.22	65.06
65plus	13,553	9.85	2,182	2.43	16.09
Total	137,645	100.00	89,839	100.00	65.26

Females

15 years	5,427	4.22	135	0.56	2.48
16-17	8,748	6.80	2,221	9.28	25.38
18-19	7,713	6.00	4,000	16.71	51.86
15-19	21,888	17.01	6,356	26.56	29.04
20-24	14,950	11.62	5,597	23.39	37.43
25-34	24,958	19.40	4,078	17.04	16.33
35-44	23,150	17.99	3,371	14.09	14.56
45-54	18,360	14.27	2,741	11.45	14.92
55-64	11,997	9.33	1,342	5.61	11.18
65plus	13,342	10.37	447	1.87	3.35
Total	128,645	100.00	23,932	100.00	18.60

Source: Calculated from 1961 Census, Labour Force, D.B.S. 94-533

TABLE 2-6

NEWFOUNDLAND LABOUR FORCE PARTICIPATION RATES

1961

TOTAL POPULATION

Age Group	Pop. 15 years and over	%	Labour Force	%	Participation rate
15 years	10,790	4.05	326	0.29	3.02
16-17	17,816	6.69	4,380	3.85	24.58
18-19	15,223	5.72	8,472	7.45	55.65
15-19	43,829	16.46	13,178	11.58	30.06
20-24	30,238	11.35	17,679	15.54	58.46
25-34	52,290	19.63	26,974	23.71	51.58
35-44	48,964	18.39	24,638	21.65	50.31
45-54	39,343	14.77	19,046	16.74	48.41
55-64	24,731	9.29	9,627	8.46	38.92
65plus	26,895	10.10	2,629	2.31	9.77
Total	266,290	100.00	113,771	100.00	42.72

Source: Calculated from 1961 Census, Labour Force, D.B.S. 94-533.

to the fact that it is women who give birth to children and must rear them, or any number of other reasons; but irrespective of the reasons, female withdrawal from the labour force affects the size of the labour force, although not the size of the labour supply. Lewis made the mistake of focusing his attention on the labour supply, and not on the labour force by disregarding the participation rates of the various groups within the labour force, i.e. the female participation rates.

Fortunately the highest participation rates for all age groups in Newfoundland, in 1961, was recorded by the 20 to 54 age group. This group comprised approximately 65% of the labour supply and approximately 78% of the labour force in Newfoundland. It will be shown later that the province of Newfoundland does have a surplus labour supply (as well as a surplus labour force), but it suffices to say at present that the largest age group in the labour supply has the largest participation rate, and therefore, that the application of the Lewis Growth Model in the province is not likely to be upset by a small labour force. The Lewis model should, possibly, have laid emphasis on the size of the labour force, rather than on the size of the labour supply.

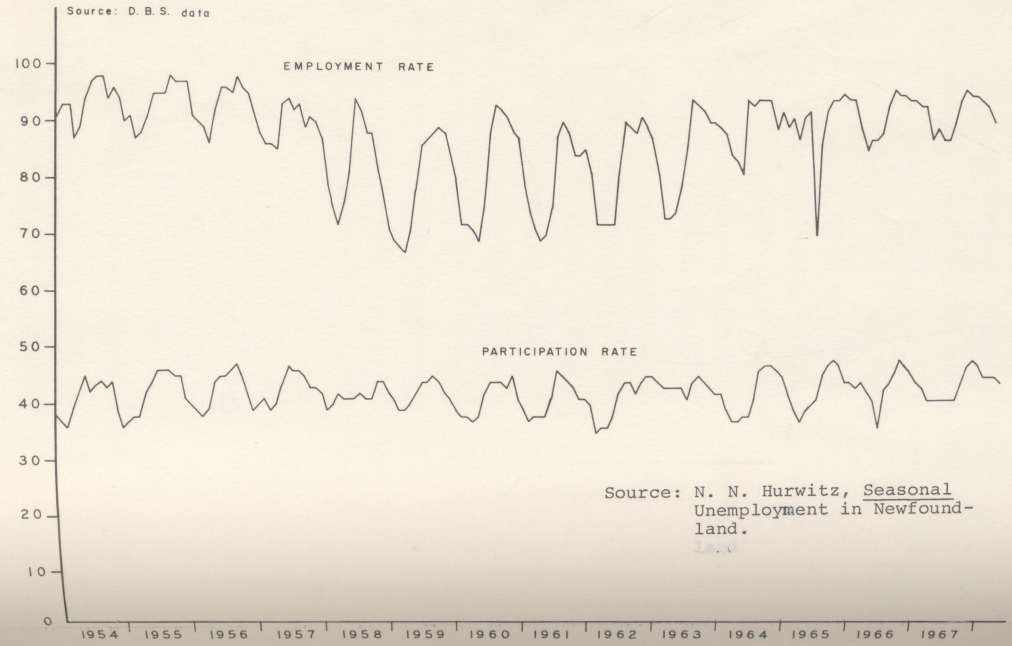
The second approach which will be used to analyse the participation rates in Newfoundland concerns the nature of the province with respect to seasonal changes and cyclical phenomena.

The strength of the effects of seasonal changes is

not only dependent on the extremities of climatic conditions, but also on the orientation of the economy in question. Newfoundland is a resource based-economy, i.e. fishing and forestry play an important role in the economy, and it is therefore not surprising that the participation rate declines annually during the winter months (see graph overleaf). Although the labour supply in the economy is not likely to change with seasonal changes, the size of the labour force may do so. It is therefore possible that the surplus labour supply in the economy could have little effect on economic development of the economy because of seasonal changes. If economic development does change the structure of the economy, and there is little reason to doubt this, then the migration of labour to the industrial sector will diminish the effects of seasonal changes on the labour force participation rate. It may therefore be concluded that although seasonal changes do not prevent labour from moving from the resource-based industries to the secondary sector of the economy, they do effect the size of the labour force in the resource-based industries; and therefore have a detrimental effect on a Lewis type growth during specific seasons. The size of the labour force in the resource-based industries has a direct influence on the extent of migration to the industrial sector, (migration is a function of the labour force, not the labour supply). A decline in the labour force in the primary sector may therefore affect the elasticity of the supply of labour in the industrial sector,

GRAPH 2-1

LABOUR FORCE IN NEWFOUNDLAND - 1954 TO 1965 - BOTH SEXES
IN PERCENTAGES



Source: N. N. Hurwitz, Seasonal Unemployment in Newfoundland.

which, according to Lewis, is the determinant of the wage level. Wages may therefore be forced upward during the winter months, and profits may therefore decline. A rise in the level of money wages during the winter months is not likely to be followed by a decline in this level during summer when the supply of labour to the industrial sector becomes elastic, as a rise in the wage level is generally irrevocable - there is little that upsets labour more than a decline in the wage level, and union pressure (even with an elastic supply of labour) would certainly not allow it. However, real wages could fall during the summer months, as entrepreneurs would be inclined to raise the prices of their products if a rise in the wage level caused an increase in the demand for final products. The Lewis model may therefore be modified to envisage spurts of development during the summer months and slackening periods during the winter months, if the decline in the labour force participation rates during the winter months cause a shortage of labour in the industrial sector. It will be seen in chapter IV that the labour force in Newfoundland does not appear to diminish in size sufficiently to create a shortage of labour in the industrial sector, so that although seasonal changes pose a threat to the application of the Lewis model in its original form in the province, this threat has not materialized. We next turn to cyclical phenomena.

Although the Lewis model does not consider the role of the labour force participation rate during inflation, this

rate does play an important role - in favour of the application of the model.[6] Inflation is associated with an increase in employment following an increase in investment. Lewis assumed that inflation would be brought to a halt when profits rise sufficiently so that further capital investment may be financed from profits rather than from bank credit. If the participation rate of labour were low, then it is possible that the inflation would end before the surplus supply of labour is absorbed, irrespective of the level of profits. But an inflation is also associated with a rise in the participation rate, as an increase in the demand for labour (through an increase in investment) could encourage many of the members of the labour supply to join the labour force. Students, for example, may forgo or postpone their education because of the employment opportunities associated with inflation. The result could be a continued surplus labour force, and therefore a continued developmental process - according to Lewis. (But the inflationary process is not only brought to a halt by a lack of labour; it is possible that the inflation could end because of a sudden upsurge in the supply of final products on the market, or a rise in the prices of capital equipment).

As for Newfoundland, the participation rate of the labour force is sufficiently high to sustain economic development in the economy, simply because it still has a surplus labour force in relation to the demand for labour, and this

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[6] Lewis, page 160.

rate is likely to remain at a comparatively high level irrespective of the present inflation in the economy.[7] If it is accepted that the only constraints to the expansionary process will be an eventual lack of labour, then according to the Lewis model, Newfoundland is assured of development.[8] In any event, the inflationary application does not apply to Newfoundland, because the process is dependent on events in North America, of which Newfoundland is only a small part. Moreover, the economic world to which Newfoundland is tied, i.e. North America and Europe, is at a stage of economic development wherein high levels of saving and investment are not dependent on inflation.

The Lewis argument is highly dependent on the mobility of the labour supply in the resource-based industries, as the surplus labour supply in the industrial sector depends on the labour supply in the primary sector. It will therefore be necessary to analyse the mobility of labour within the province.

Labour Mobility within an Economy

The size of the labour supply in an economy affects

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7 In fact, the whole of Canada is in the throes of an inflation.
8 The argument is based purely on the size of the labour supply - an analysis of labour demand could lead to a different conclusion.

the size of the labour force in so far as the participation rate of the labour force and the mobility of labourers allow. For, with a low participation rate and negligible mobility, the size of the labour force is likely to remain unaffected. The participation rate in Newfoundland has been discussed, and it is now necessary to analyse the mobility of labour within the province.

Importance of Labour Mobility to the Lewis Model

The basis of the Lewis Growth Model is that there should be a surplus supply of labour available in the economy in order to allow the formation of capital without an increase in the level of wages resulting from a shortage of labour. A constant wage level, which is determined by an elastic supply of labour, results in high profits which are reinvested to accomplish capital formation. It is therefore a desirable feature for an expanding economy to have a mobile labour supply. An economy that has a labour supply which can readily move from one area, industry, or occupation to another, is likely to eliminate the bottlenecks to its economic development.

The primary sector, from which the labour supply migrates, is also likely to benefit from migration, as it is assumed that the marginal productivity of labour in this sector is zero or negative. Migration will therefore not result in a reduction of output in this sector, but should raise the

average productivity of labour, and eventually its marginal productivity. Eventually, after a sizable portion of the primary sector's labour supply has migrated to the industrial sector, the marginal productivity of the primary labour force is likely to increase. The increase in the marginal productivity is not only caused by a decrease in the size of the labour supply in this sector, but also by an increase in demand for food products by the growing industrial labour force. A further assumption is therefore made that the primary sector becomes commercialized with economic expansion in the industrial sector, and therefore reacts to fluctuations in the prices of food products. In addition to this, it is assumed that the methods of production in the primary sector change; that farmers abandon the traditional methods of production, and react to the advancement of technology.

Mobility of labour from the primary sector to the industrial sector should result in an increase in the national income of the economy, and this increase in the national income should continue as long as the supply of labour is elastic. An elastic supply of labour presupposes a sufficiently high participation rate, as well as a mobile labour supply. The backward linkages in the industrial sector are strengthened by the commercialization of the primary sector, and the backward linkages of the primary sector are eventually strengthened by capital intensification as the labour supply in this sector diminishes. The final output of the industrial sector should

rise continually, and is purchased by the growing labour force in this sector; the purchase is made possible by the growing wage bill resulting from an increase in employment.

In addition to the tangible effects of the migration of labour to the industrial sector, there are also intangible effects. Economic development is synonymous with the acquisition of skills and education, and this acquisition stimulates further development. This aspect shall be dealt with in the next chapter, as it involves the quality dimensions of the labour supply.

In order to analyse the mobility of the labour supply in Newfoundland, it will first be necessary to examine the nature of the economy, and in particular its primary sector. No economy completely fits the prescribed pattern laid down by Lewis, and the model will therefore have to be modified further to embrace conditions in Newfoundland.

The Newfoundland Primary Sector

An underdeveloped economy is generally associated with a large agricultural population in relation to the size of the total population. However, Newfoundland has a relatively insignificant agricultural population. Instead, a large portion of the entire population is engaged in the fishery.

Entry into the fishery is relatively easy, as the traditional methods require little capital expenditure. The

TABLE 2-7

NEWFOUNDLAND FISHERY AND AGRICULTURE STATISTICS

Fishery

	No. of fishermen	Full-time	Part-time	Occasional	Inshore	Offshore
1957	16,469					
1958	18,364					
1959	18,430					
1960	18,291					
1961	18,756					
1962	19,817	13,181	3,466	3,170	19,205	612
1963	21,407	14,714	3,515	3,178	20,631	776
1964	22,615	15,897	3,520	3,198	21,753	862
1965	21,701	14,299	4,364	3,038	20,731	970
1966	20,286	12,673	4,094	3,519	19,324	962
1967	19,814	12,161	4,191	3,485	18,588	1226

Full-time: 10 months or more; Part-time: 5-10 months;
Occasional: less than 5 months.
Source: Fisheries Statistics, Newfoundland, D.B.S. 24-202.

Agriculture

	Total population	Population living on farms*	Percent.
1951	361,416	19,975	5.5
1956	415,074	13,055	3.1
1961	457,853	11,090	2.4
1966	493,396	9,236	1.9

* Number of labourers not available.
Source: D.B.S. 96-602, Volume III (3-2), June 1968.

traditional method is called 'inshore fishing', whereby fishermen use small boats to fish fairly close to the shore. Newfoundland is situated close to very fertile fishing areas, and this naturally encourages entry into this sector.

Until recently production in the fishery was mainly for subsistence, and therefore offered little to the development of the economy. During the summer months fishermen are actively engaged in fishing, but because of climatic conditions, they tend to be idle during winter.

The nature of the fishery has led to the fragmentation of the province into more than a thousand small fishing villages called 'outports', and each is a self-sufficient, geographically isolated entity. One could envisage the outports as Lewis type farming communities (with the exception that the main produce is fish), and therefore look to these outports as a source of the surplus supply of labour.

Although these outports are largely self-sufficient economic entities, their self-sufficiency is limited by those commodities which cannot be produced within the outports. The purchase of these commodities requires the sale of fish in order to attain purchasing power, and fishermen are therefore compelled to produce for the market. It is not unusual for fishermen to leave the fishery and the outports because of a low yield, or because of a decline in the price of fish. This is a cause of migration to the industrial sector. Moreover, the continu-

ing depletion of Cod may accelerate this migration.

Table 2-7 shows that between 1957 and 1967 the number of fishermen increased by more than 3,000. Families in the outports are notoriously large, and it is quite probable that the increase in the number of fishermen resulted from a natural increase in population, rather than from the migration of labour from other sectors in the economy. Between 1964 and 1967 the number of fishermen decreased considerably, and this may be attributed to the migration of fishermen to the industrial sector. Another possible reason for the migration is that the advent of television and radio has created a need within people for goods which were unknown to them earlier, and which cannot be afforded by subsistence producers.

Governmental programs have possibly played the most important role in causing the residents of outports to move to urban areas. There are currently two mobility programs in operation in the province: one is a nation-wide Manpower Mobility Program which is operated by the Federal Department of Manpower, and the other is the Fisheries Household Resettlement Program which is administered by the Provincial Government. The Manpower Mobility Program provides financial assistance to any Canadian labourer who is unemployed or who must migrate to other areas in Canada in order to find better employment. The program allows for an "Exploratory Grant", which allow labourers (over the age of 17 years) to explore employment opportunities and working and living conditions in other

areas in Canada. The program also provides financial assistance to persons who wish to travel to another locality in order to obtain training which is not available in their own areas, or to relocate in localities where their abilities can be more productively utilized.

Between April 1, 1967 and November 16th, 1967 the Manpower Mobility Program moved 569 people on trainee travel grants, 208 on exploratory grants, and relocated 280 families.[9]

The Fisheries Household Resettlement Program (hereafter refered to as the Resettlement Program), which is administered by the Provincial Government, is by far the more important of the two programs in the province. The aim of the program is to improve the standard of living of the rural population and to reduce the costs of serving a widely dispersed population. The program attempts to resettle families in areas where better employment and social facilities are available. According to the Resettlement Program, each eligible householder can receive a direct grant of $1,000, and additional grants of $200 for each member of the household, and the actual travel and removal expenses of family, personal effects, fishing equipment, etc., but not to include the cost of replacement of real or immovable property.[9] The program attempts to resettle entire communities to urban areas, but before this is done, it is

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9 Report of the Royal Commission on the Economic State and Prospects of Newfoundland and Labrador, St. John's, 1967, Page 120.

necessary that 80% of the residents in the communities should have agreed to resettle in an approved land assembly area in a designated major Fishery Growth Centre. Agreement to resettle in a Fishery Growth Centre entitles each householder to the price of a building lot not exceeding $3,000, or the actual cost of the lot, whichever is the lesser, in addition to the above. Alternately, agreement to resettle in an Approved Resettlement Centre entitles each householder to the price of a building lot not exceeding $1,000, or the actual cost of the lot, whichever is the lesser. The $3,000 or $1,000 are provided on condition that householders live on the lots for a minimum of five years.

Between April 1, 1967 and October 31st, 1967, 628 householders moved under the Resettlement Program, which represented 3,400 household members. The total payments made for this period was approximately $1.4 million.[10]

There appears to be little doubt that the Resettlement Program can be of benefit to the economy of Newfoundland, as one of the conditions of economic development is that the rural population should gradually migrate to urban areas. However, many writers on the topic question the efficiency of the program in its present form.[11] Lewis did not specify

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10 ibid page 120.
11 Cato Wadel, Marginal Adaptations and Modernization in Newfoundland, Institute of Social and Economic Research, Memorial University of Newfoundland, St. John's, 1969, chapter VII.

the rate at which the rural population should migrate to urban industrial areas, but he gave the impression that it would be desirable for labour to make itself available as industry is established, so that massive unemployment would not result from too much migration, irrespective of disguised unemployment in the rural areas. The Resettlement Program in Newfoundland appears to be moving people in the hope of finding employment for them, rather than with the knowledge that employment is available, and has thus resulted in a certain amount of unemployment. The major benefit derived from the Resettlement Program is yet to be felt, as educational facilities as well as health facilities are more readily available to the former residents of the outports, and this is likely to be reflected by the next generation of Newfoundlanders. This aspect will be dealt with more fully in the next chapter.

A distinction may be made between a "pull" and a "push" migration of the labour supply to urban areas. The type of migration postulated by Lewis may be considered a "pull" migration, whereby the labour supply is attracted to the urban areas by the prospects of increased employment opportunities and higher earnings than are available in the rural areas. The Resettlement Program represents a "push" migration, in which residents of the outports are encouraged to leave their homes in order to provide the future generation with greater opportunities. The eventual result of both types of migration is likely to be the same, as both provide industry with a surplus

supply of labour, but whereas the "pull" migration is a natural process and benefits both the urban and rural labour supply, the "push" migration must inevitably result in some immediate unemployment although development is still made possible. The present migration process in Newfoundland is therefore not likely to work against the Lewis Growth Model, but for it, with the exception that this method is faster, but less efficient than the "pull" migration.

Although the Federal and Provincial Governments are encouraging the migration of the residents of the outports to the urban areas, they are, at the same time, partially defeating their purpose by means of transfer payments to these residents. Transfer payments represent an important source of income to fishermen in the outports as shown by table 2-8, in which transfer payments totalled not less than 31% of total incomes. The most important transfer payment is the Unemployment Insurance Benefit (UIB), which rewards fishermen during winter according to their yield during the fishing season.

> "Unlike other transfer payments, UIB is a reward for hard work and for doing well rather than a consolation for doing poorly. Moreover, in an adaptation in which there is very great uncertainty, as to economic returns it would seem folly not to try to secure the UIB, both because of its scale, relative to outport income, and because of its guaranteed payment. The fishermen have thus adapted very consciously to the scheme."[12]

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[12] Wadel, page 50.

TABLE 2-8

INCOMES OF HOUSEHOLD HEADS IN SIX NEWFOUNDLAND COMMUNITIES - 1964

Source of Income	Petty Harbour Area	Trepassey Area	Straits Area	Labrador Area	Catalina Area	Port De Grave Area	Total
Fishing	838	837	827	1,008	722	1,665	987
%	39%	38%	37%	48%	31%	60%	43%
Other Earned Cash Income	446	211	297	117	784	134	336
%	21%	9%	13%	9%	33%	5%	15%
Subtotal	1,284	1,048	1,124	1,185	1,506	1,799	1,323
%	60%	47%	50%	57%	64%	65%	58%
Non-Cash Income*	14	312	398	171	90	98	195
%	1%	14%	18%	8%	4%	4%	8%
Subtotal	1,298	1,360	1,522	1,356	1,596	1,897	1,518
%	61%	61%	68%	65%	68%	69%	66%
Transfer Payments#	852	867	732	732	731	888	791
%	39%	39%	32%	35%	32%	31%	34%
Total Income	2,150	2,227	2,254	2,088	2,327	2,785	2,309
%	100%	100%	100%	100%	100%	100%	100%

* Includes only food items. # Transfer payments include unemployment benefits, pensions, family allowances, and welfare payments.
Source: C. Wadel, Marginal Adaptations and Modernization in Newfoundland, Institute of Social and Economic Research, Memorial University of Nfld., St.John's, 1969, page 40.

Mr. Wadel attributes part of the increase in the number of fishermen over the past decade to the introduction of the UIB.[13] This attribution is quite feasible, as it is possible that the number of fishermen would have decreased had the UIB not been introduced, but the introduction of the UIB has made it possible for the residents of the outports to continue to live in the outports.

Not only does the UIB have a detrimental effect on the migration of the residents of the outports, but it also has a detrimental effect on production i.e. yield of fish. One would expect that a reward in accordance with the yield would encourage fishermen to strive to attain higher yields, but this is not the case. According to the conditions of the UIB, a fisherman must attain a certain yield during the fishing season in order to be eligible for the UIB - a fisherman is eligible if he attains one stamp for each 15 weeks during the fishing season (for salt fish, one stamp is attained on delivery of about one and a half qutls.). The fisherman is entitled to a maximum of $36 a week of UIB from December to mid-May. Eligibility for UIB is therefore the goal, and the fisherman is not encouraged to fish beyond the attainment of the maximum number of stamps. The Lewis model implies that the primary producers will become more productive during the process of economic development, but this implication is contradicted in the Newfoundland fishery because of transfer

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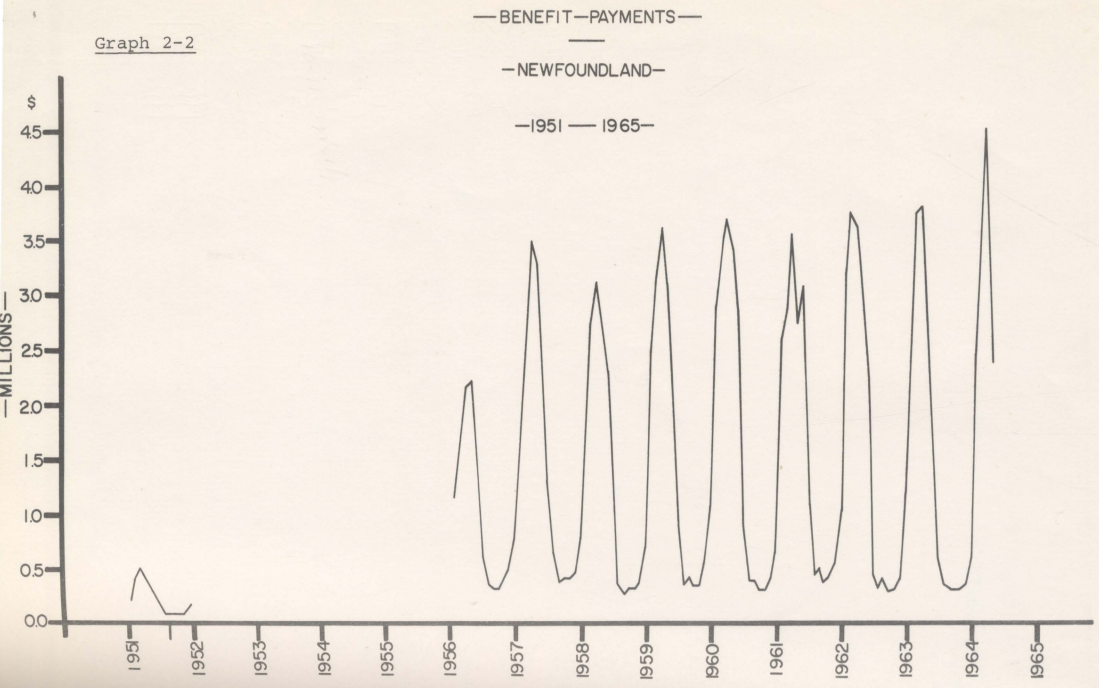
13 Wadel, page 51.

Graph 2-2



—SOURCE—
D.B.S. DATA
4-25

from N. N. Hurwitz, Seasonal Unemployment in Newfoundland.

payments. Under the present methods of transfer payments, the residents of the outports are neither encouraged to migrate to urban areas nor to become more productive. However, the Lewis model may still be considered applicable to the economy of Newfoundland by virtue of the fact that migration is taking place, but the application of the model is qualified by the effects of transfer payments.

One of the aims of the Resettlement Program is to develop the offshore fishery which is supposedly far more beneficial to the economy than the inshore fishery. Offshore fishing is a more modern method used in the fishery, whereby larger fishing vessels such as trawlers are used to fish far away from the shore. The advantages to offshore fishing are that the vessels carry their own ice, and it is therefore possible to prevent the deterioration of the fish; and that the vessels are capable of reaching distant areas which have a greater abundance of fish. The offshore fishery is more capital intensive than the inshore fishery, and is likely to be more productive per labour unit, given good management. The Lewis model requires that the primary sector should become more capital intensive and productive in order to aid the development process. The development of the offshore fishery therefore appears to be desirable, if not natural. Unfortunately, the development of the offshore fishery in Newfoundland is not a natural result of economic development. In the Lewis model farmers do not have to move to other areas in order to farm with more capital, but in

Newfoundland fishermen must move to urban fishing areas, i.e. Fishery Growth Centres, in order to be employed in the offshore fishery. But salaries in the offshore fishery are reputed to be low, and the working conditions are not as favourable as in the inshore fishery; there is thus a shortage of fishermen in the offshore fishery.

> "The problem now is first of all labour, and it is quite clear that this has become the limiting factor in the development of the industry. In one of the alarmed front page stories in the Evening Telegram, the public was informed that Fishery Products Limited had cancelled orders for five new trawlers, and that two ships were tied up on the south coast for want of personnel. Part of the problem was also the marketing situation, especially in the U.S.A. (March 7th, 1967)."[14]

In addition to the shortage of fishermen in the offshore fishery, there is also a 30% turnover of employees in the trawler crews.[15] The shortage of employees in the offshore fishery, i.e. the modernized part of the primary sector, would appear to work against the application of the Lewis model in Newfoundland, as it may be reasoned that a shortage of labour in the primary sector is likely to cause increases in the wage levels in that sector, which would ultimately influence wage increases in the industrial sector. But at the same time there

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[14] Ottar Brox, Maintenance of Economic Dualism in Newfoundland, Institute of Social and Economic Research, Memorial University of Newfoundland, St. John's, 1969, page 29.
[15] Brox, page 30.

is unemployment in the province, and therefore the shortage of labour in the offshore fishery is not likely to affect wage levels in the industrial sector.[16]

The Effects of Migration

The migration of the rural population to the urban industrial areas enlarges the labour supply in the urban areas, and has an improving effect on the quality of the migrants. The effects on the quality of the labour supply will be analysed in the next chapter, while this section will be used to show the effects of intermunicipal migration on the size of the labour force in Newfoundland.

According to the Dominion Bureau of Statistics, 10,191 members of the labour force migrated to other areas in the province between 1956 and 1961. 94.4% of the migrants were employed and only 5.6% were seeding employment. This observation is in accordance with the Lewis model, as the model implies that the migrants were previously employed (in the agricultural sector), although their status was actually one of disguised unemployment. Whether this is the case in Newfoundland is hard to say, but table 2-10 does indicate that during the five year

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16 Employment statistics follow shortly.

period under review the proportionate size of the population in the rural areas declined, and it may be concluded that many of the migrants were not likely to have been very productive prior to migration because of the nature of production in the rural areas.

Between 1956 and 1961 the population in the rural areas decreased by approximately 4,000 while the population in the urban areas increased by approximately 46,000. This discrepancy in the two figures may be attributed to natural population growth (i.e. an excess of births over the number of deaths) and the incorporation of rural areas into towns.[17] In reality it is therefore possible that far more than 4,00 people migrated from the rural areas, and fewer than 47,000 people entered urban areas. Whatever the actual figures are then, we do know that there has been a considerable migration to the urban areas from the rural areas, and that this migration enhances the plausibility of the application of the Lewis Growth Model to the economy of Newfoundland. However, it is still not known what proportion of the mobile rural population belonged to the labour force, or who entered the labour force after migration, but it may be safely assumed that a fairly large portion of the 10,191 migrant members of the labour force (between

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17 Occassionally the residents of an area apply for urban status, and then elect their municipal council.

TABLE 2-9

LABOUR MOBILITY, 1956 TO 1961, WITH NEWFOUNDLAND AND TO THE

THE REST OF CANADA≠

	Movers+within			To Rest of Canada Ø			Total movers		
	M	F	Total	M	F	Total	M	F	Total
Total	7,231	2,960	10,191	3,737	1,294	5,013	10,968	4,254	15,222
With a job	6,712	2,904	9,616	3,575	1,206	4,781	10,287	4,110	14,397
15 - 19 yrs	598	1,063	1,661	183	213	396	781	1,276	2,057
20 - 24	1,297	982	2,279	835	375	1,210	2,132	1,357	3,489
25 - 29	1,456	325	1,781	779	205	984	2,235	530	2,765
30 - 34	1,062	126	1,188	616	146	762	1,678	272	1,950
35 - 44	1,241	239	1,480	839	179	1,018	2,080	418	2,498
45 - 64	1,026	165	1,191	313	88	401	1,339	253	1,592
65 Plus	32	4	36	10	-	10	42	4	46
Looking for work	519	56	575	162	88	250	681	144	825
15 - 19	120	27	147	30	26	56	150	53	203
20 - 24	94	*	*	66	41	107	160	*	*
25 - 29	50	*	*	23	5	28	73	*	*
30 - 34	65	*	*	20	11	31	85	*	*
35 - 44	119	*	*	18	5	23	137	*	*
45 - 64	60	*	*	5	-	5	65	*	*
65 Plus	11	*	*	-	-	-	11	*	*

≠ Only emigrants from Newfoundland, immigrants not considered.
+ From different municipality.
Ø Excludes Yukon and Northwest Territories.
* Figures not available.

Calculated from D.B.S. 98-510.

TABLE 2-10

POPULATION DISTRIBUTION OF

NEWFOUNDLAND

	1951	%	1956	%	1961	%	1966	%
Total	361,416	100	415,074	100	457,853	100	493,396	100
Rural	206,621	57.17	229,822	55.37	225,833	49.32	226,707	45.95
Farm*	15,456	4.28	10,138	2.44	9,077	1.98	8,455	1.71
Non-farm	191,165	52.89	219,684	52.93	216,756	47.34	218,252	44.24
Urban	154,795	42.83	185,252	44.63	232,020	50.68	266,689	54.05
30,000 - 99,999	52,873	14.63	77,991	18.79	85,192	18.61	92,636	18.77
10,000 - 29,999	-	-	23,225	5.60	48,214	10.53	27,116	5.50
1,000 - 9,999	100,375	27.77	84,036	20.24	98,614	21.54	146,937	29.78

* Exclusive of persons living on farms in localities classified as 'urban'. 'Farm' means 'census-farm'.

Sources: Census of Canada, 1951, 1956, 1961, and 1966 - D.B.S.

1956 and 1961) did move from rural areas either because of the Resettlement Program or because of personal and financial reasons.

Although the urban areas gained a considerable number of labourers from the migration of the residents of the rural areas, much of the gain was offset by the emigration of Newfoundlanders to the rest of Canada. During the five year period under review 5,031 members of the labour force left the province. The majority if these emigrants are likely to have been former residents of the urban areas in the province, and as we have concluded earlier in the chapter, their emigration partially offset the gains of rural migration to the urban areas. This observation does not contradict the application of the Lewis model to Newfoundland, as the model merely requires that an elastic supply of labour should be available in order to stimulate industrial expansion, but it does set a time limit beyond which the economy will no longer develop (if the Lewis model is accepted), as emigration serves to hasten the day when there will no longer be a surplus supply of labour in the province.

CHAPTER III: THE QUALITY DIMENSIONS OF THE LABOUR SUPPLY

There are many different interpretations of the term 'quality', ranging from the cultural attainment of a nation to the number of aristocrats within a nation. In economics, however, the interpretation is far more limited, and merely refers to the increase in productivity of the labour supply within the nation.

The increase in productivity of the labour supply plays an important role in the Lewis Growth Model, as it is a major cause of the increase of entrepreneurial profits during the development process. According to the model, the growth of productive capital and the growth of technical knowledge may be treated as a single phenomenon, and are the cause for the increased productivity of the labour supply.[1] No mention is made of the increased productivity of the labour supply resulting from factors such as increased educational expenditure, but these are important aspects, as they play a role in the labour supply's ability to adapt to technological advancement. Lewis assumed that the lack of skills is only a "quasi-bottleneck" to the development process, because "if the capital is available for development, the capitalists or their government

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[1] Lewis, page 153.

will soon provide the facilities for training more skilled people."[2] The problem arises where the people who are to be taught the necessary skills do not have the ability to adapt themselves to learning new techniques; capital accumulation does not automatically result in a more productive labour supply.

The Determinants of Productivity

Lewis' assumption that the skills needed in the industrial sector to accomodate the growth of productive capital will be met fairly easily, presupposes the ability of the labour supply to become more productive. But he disregards the underlying determinants of labour supply productivity as well as the hinderances to productivity. The determinants and hinderances to productivity broadly fall into the following categories: customs and institutions, education, management, health, environment, and the age distribution of the labour supply.

The customs and institutions of a nation play a role in the adaptability of the labour supply to changes in the economy. During the earlier stages of the development process the role of customs and institutions may be profound, as they may be a major hinderance to development. Fishermen in Newfound-

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2 Lewis, page 145.

land, for instance, are accustomed to being self-employed, and it is quite possible that they may find it difficult to adapt to the straight lines of authority in the industrial sector, which could deter their productivity. Fortunately customs and institutions change with economic development, and this could ultimately accelerate the process.

Education is possibly the most important determinant of labour supply productivity, as it gives the individual the ability to adapt to economic changes. The importance of education is not measured by the knowledge acquired, but by the ability acquired to apply this knowledge. Lewis presupposed this ability, but that would imply that the labour supply in the primary sector have all attained a measure of formal education. One aspect of an underdeveloped economy is the lack of adequate educational facilities, which invalidate Lewis' presupposition.

The importance of management was also overlooked by Lewis. Management has the task of allocating labour in such a way so as to attain the highest degree of productivity. Inefficient management may offset the gains of technological advancement if, for instance, there are too many labourers per unit of capital. Lewis did not mention the allocation of labour, and obviously assumes efficient management.

A characteristic of underdeveloped economies is the prevalence of disease and lack of medical facilities.[3] The

productivity of labour will be low, even with modern capital equipment, if steps are not taken to see that workers are healthy. Not only does absenteeism result from ill health, but the inability to work properly also affects the overall productivity of labour. Lewis' model obviously assumes a healthy nation.

Environmental change, as a result of migration to industrial areas, often increases the productivity of individuals. An individual who moves from a non-productive farming community to the industrial sector is likely to be influenced by the community of that sector, so that he may become far more productive than he had previously been. It is possible that this happened to immigrants to the United States of America during the earlier part of this century. In this respect Lewis is correct in his assumption that the labour supply becomes more productive upon entry into the industrial sector.

The age distribution of the labour supply is a reflection of the ability of the labour supply to adapt to economic changes. The younger the labour supply is, the more adaptable it is likely to be, as young people are not yet set in their ways, and are often more ambitious than older people. An underdeveloped economy is likely to have a 'bottom-heavy' age distribution in its labour supply, as the birth rates in these

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3 A. Pepelasis, L. Mears, and I. Adelman, Economic Development: Analysis and Case Studies, Harper and Brothers, New York, 1961, page 69.

economies are generally high. Although Lewis did not consider this point, it does enhance his model, as most of the migrants to the industrial sector are likely to be fairly young and easily adaptable.

Because of its shortcomings, the Lewis model must be modified to account for the determinants and hinderances to labour productivity, as unproductive labour could raise the costs in the industrial sector. An increase in the costs is reflected in the level of profits, which is reflected in the level of investment. A decline in the level of investment will have a direct effect on the development of the economy. In order to test the plausibility of the application of the model in the economy of Newfoundland, the factors affecting labour productivity will have to be analysed. Because of the lack of adequate data only two of the above will be analysed i.e. education and age structure in the province.

Education in Newfoundland

Since the Second World War economists have discovered that the road to economic development is mainly a matter of developing human talent, and that it can be deliberately aided by the allocation of resource in a generous but fair manner.[4]

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4 H. M. Groves, "Education and Economic Development", in Benson (ed.), Perspectives on the Economics of Education, Houghton Mifflin Company, Boston, 1963.

This is based on the assumption that not only should the factors of production in an economy be increased, but should also be improved; development could result from either, but both are desirable. As does Lewis, the classical economists stress the importance of an abundance of tangible capital; it is true that such an abundance is ideal for development, except that the abundance often follows development, and in turn causes its furtherment. But without a labour force sufficiently trained to utilize the capital, development is lost. We are concerned with the ability of individuals to adapt to training, and therefore to gain the most from training; education is a major determinant of this ability. Education serves "to help the person withstand the inevitable changes between what he learns and what will be expected of him throughout his life."[5]

Between 1949 and 1968 the 0 to 19 age group in Newfoundland increased from 45.2% to 50.8% of the total population.[6] It is mainly this age group which attends school. Not only has the population increased, it has become younger - requiring that a greater proportion of this population be enrolled in schools in order to maintain the same educational standard in the province. This requires that the enrolment should have increased by 65.4% following an equal percentage increase in

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5 S. M. Wolfbein, "Implications of our Rapidly Changing Population", in Benson (ed.), Perspectives on the Economics of Education, Houghton Mifflin Company, Boston, 1963.

6 See table 3-1.

TABLE 3-1

POPULATION OF NEWFOUNDLAND BY AGE AND SEX ('000)

	Total			0 - 14			15 - 19		
	T	M	F	T	M	F	T	M	F
1949	345.0	176.3	168.7	122.7	62.1	60.6	33.0	16.6	16.4
1950	351.0	179.7	171.3	128.4	64.9	63.5	32.6	16.6	16.0
1951	361.4	185.1	176.3	141.1	71.8	69.6	30.3	15.3	15.0
1952	374.0	192.2	181.8	146.9	74.8	72.1	31.5	16.0	15.5
1953	383.0	196.8	186.2	151.4	77.1	74.3	32.1	16.3	15.8
1954	395.0	203.8	191.2	157.5	80.2	77.3	33.3	16.8	16.5
1955	406.0	209.2	196.8	163.6	82.9	80.7	34.6	17.4	17.2
1956	415.1	213.9	201.2	169.0	85.2	83.8	35.7	17.9	17.8
1957	424.0	218.4	205.6	173.5	87.6	85.9	37.2	18.5	18.7
1958	432.0	222.3	209.7	177.6	89.6	88.0	38.4	19.1	19.3
1959	441.0	226.7	214.3	182.4	92.2	90.2	40.1	20.0	20.1
1960	448.0	230.1	217.9	186.5	94.6	91.9	41.9	20.9	21.0
1961	457.9	235.0	222.9	191.6	97.3	94.3	43.9	22.0	21.9
1962	468.0	239.9	228.1	195.1	99.2	95.9	45.3	22.7	22.6
1963	476.0	243.9	232.1	207.5	100.5	107.0	47.1	23.6	23.5
1964	483.0	247.5	235.5	199.1	101.4	97.7	49.3	24.7	24.6
1965	488.0	249.6	238.4	199.1	101.4	97.7	51.9	26.0	25.9
1966	493.4	252.1	241.3	199.1	101.6	97.5	54.3	27.3	27.0
1967	500.0	255.5	244.5	199.2	101.7	97.5	56.6	28.5	28.1
1968	507.0	258.7	248.3	199.0	101.6	97.4	58.5	29.5	29.0

Continued overleaf .....

TABLE 3-1...Continued

	20 - 24			25 - 34			35 - 44		
	T	M	F	T	M	F	T	M	F
1949	30.6	15.4	15.2	51.1	26.3	24.8	37.5	19.8	17.7
1950	29.6	15.0	14.6	50.1	25.9	24.2	39.2	20.7	18.5
1951	26.7	13.4	13.3	48.9	25.3	23.6	41.4	21.9	19.5
1952	27.7	14.1	13.6	50.1	25.9	24.2	42.9	22.7	20.2
1953	28.3	14.5	13.8	50.8	26.3	24.5	43.9	23.2	20.7
1954	29.0	15.1	13.9	51.6	27.0	24.6	45.1	23.9	21.2
1955	29.5	15.4	14.1	52.0	27.4	24.6	46.5	24.6	21.9
1956	30.0	15.7	14.3	52.2	27.8	24.4	47.8	25.5	22.3
1957	30.4	15.8	14.6	52.5	28.0	24.5	48.7	25.9	22.8
1958	30.4	15.7	14.7	52.7	28.0	24.7	49.1	26.1	23.0
1959	30.4	15.6	14.8	52.8	27.8	25.0	49.1	26.1	23.0
1960	30.1	15.4	14.7	52.4	27.5	24.9	48.7	25.8	22.9
1961	30.2	15.3	14.9	52.3	27.3	25.0	48.9	25.8	23.1
1962	31.7	16.0	15.7	53.0	27.6	25.4	49.2	25.9	23.2
1963	32.9	16.5	16.4	53.4	27.8	25.6	49.4	25.9	23.5
1964	33.6	16.7	16.9	53.6	27.9	25.7	49.6	26.1	23.5
1965	34.4	17.0	17.4	53.3	27.6	25.7	49.2	25.8	23.4
1966	35.9	17.6	18.3	53.3	27.5	25.8	49.0	25.7	23.3
1967	38.6	19.0	19.6	53.5	27.4	26.1	48.5	25.4	23.1
1968	42.0	20.8	21.2	54.2	27.6	26.6	48.3	25.2	23.1

Continued overleaf .....

TABLE 3-1...Continued

	45 - 54			55 - 64			65 - 69			70 & over		
	T	M	F	T	M	F	T	M	F	T	M	F
1949	27.3	13.9	13.4	21.1	11.0	10.1	8.4	4.4	4.0	13.3	6.8	6.5
1950	27.6	14.1	13.5	21.1	11.0	10.1	8.6	4.5	4.1	13.8	7.0	6.8
1951	27.9	14.4	13.5	21.3	11.0	10.3	9.0	4.7	4.3	14.5	7.3	7.2
1952	28.8	15.0	13.8	21.9	11.3	10.6	9.1	4.8	4.3	15.1	7.6	7.5
1953	29.7	15.6	14.1	22.2	11.3	10.9	9.0	4.7	4.3	15.6	7.8	7.8
1954	30.8	16.3	14.5	22.6	11.6	11.0	9.0	4.7	4.3	16.1	8.2	7.9
1955	31.8	17.0	14.8	22.9	11.7	11.2	9.0	4.7	4.3	16.1	8.1	8.0
1956	32.4	17.5	14.9	23.2	11.8	11.4	8.9	4.6	4.3	15.9	7.9	8.0
1957	33.7	18.2	15.5	23.4	11.9	11.5	8.9	4.6	4.3	15.7	7.9	7.8
1958	35.3	19.2	16.1	23.6	12.1	11.5	8.9	4.5	4.4	16.0	8.0	8.0
1959	36.7	19.9	16.8	23.9	12.3	11.6	9.1	4.6	4.5	16.5	8.2	8.3
1960	38.0	20.4	17.6	24.3	12.5	11.8	9.3	4.7	4.6	16.8	8.3	8.5
1961	39.3	21.0	18.3	24.7	12.8	11.9	9.7	4.9	4.8	17.3	8.6	8.7
1962	40.6	21.6	19.0	25.6	13.2	12.4	9.9	4.9	5.0	17.6	8.8	8.8
1963	41.7	22.2	19.5	26.2	13.6	12.6	9.9	4.9	5.0	17.9	8.9	9.0
1964	42.5	22.5	20.0	26.9	14.1	12.8	10.1	5.0	5.1	18.3	9.1	9.2
1965	43.4	22.9	20.5	27.9	14.7	13.2	10.1	5.0	5.1	18.7	9.2	9.5
1966	43.8	23.1	20.7	28.7	15.1	13.6	10.3	5.1	5.2	19.0	9.1	9.9
1967	44.1	23.2	20.9	27.7	15.7	12.0	10.4	5.2	5.2	19.4	9.4	10.0
1968	44.2	23.2	21.0	30.9	17.3	13.6	10.3	5.1	5.2	19.6	9.4	10.2

Sources: (i) Revised Annual Estimates of Population by Sex and Age, D.B.S. 91-511
(ii) Estimated Population By Sex and Age Group, D.B.S. 91-202.

the 0 to 19 age group. In fact, enrolment increased by 94.2%, resulting in a greater proportion of the population obtaining some form of education.[7] In addition to this, a greater proportion of those enrolled attained higher grades of education.

Table 3-3 gives the retention rate of Newfoundland pupils for the period between 1949 and 1968. The retention rate gives the percentage of students who have remained in school. For example, of the pupils in grade II in 1949-50, only 82.2% reached grade VI in 1953-54. The retention rate for grade VI in 1953-54 is then 82.2%. This figure disregards students who have repeated certain grades, and is therefore not completely accurate, but is sufficiently accurate for our purposes.

With the exception of grade III in 1956-57, grade IV in 1957-58, and grade X in 1963-64, the retention rate rose steadily during the period under review. Grade XII is not considered here because enrolment in this grade is very erratic, as it is not offered in many schools in the province, and because no higher than grade XI is required for acceptance into the provincial university. The rise in the retention rate clearly indicates that a greater portion of the future labour force is being upgraded in education. This naturally has implications in the development of the province, as the supply of labour is

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7 See table 3-2.

TABLE 3-2

NEWFOUNDLAND EDUCATION - ENROLMENT BY GRADE

	I*	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Commercial & Special	T
1949-50	18422	10151	8923	8375	7663	6838	5408	4028	3631	2550	1809	47	426	
1950-51	17212	10417	9572	8474	7774	6809	5905	4185	3931	2734	1849	49	417	
1951-52	18004	10218	10099	9238	8057	7279	6219	4601	4227	3030	2160	62	504	
1952-53	19071	10449	10041	9772	8907	7631	6568	5098	4432	3176	2180	35	450	
1953-54	19410	11866	10243	9867	9453	8342	6943	5422	4917	3245	2201	47	408	
1954-55	19516	12554	11746	10230	9571	9010	7644	5960	5530	3518	2110	46	365	
1955-56	20025	12935	12200	11606	9824	9133	8344	6361	6047	3489	2276	32	361	
1956-57	20341	13364	12750	12094	11243	9444	8530	7315	6394	3858	2425	37	313	
1957-58	20233	13629	13236	12530	11882	10805	8801	7615	7388	3931	2807	44	342	
1958-59	20527	13884	13697	13112	12277	11612	10223	8214	7712	4887	2796	73	265	
1959-60	20449	14401	13784	13786	12772	11858	11277	9232	8371	4960	3506	125	346	
1960-61	20835	14226	14112	13624	13153	12134	11488	10058	9147	5772	3772	162	434	
1961-62	21425	14648	14072	14052	13313	12609	11781	10416	10107	6469	4266	73	516	
1962-63	21823	14763	14498	14206	13783	12693	12311	11084	10349	6821	4770	95	504	
1963-64	22143	14908	14675	14563	14122	13107	12514	11275	10893	6880	5210	57	388	
1964-65	22569	15195	14757	14837	14192	13732	13269	11139	11355	7310	5329	68	377	
1965-66	23092	14516	15103	14890	14586	13936	13411	11909	10905	7999	5750	45	361	
1966-67	23774	14835	14441	15000	14708	14023	13365	12302	11273	8104	6090	61	376	
1967-68	25079	14986	14838	14622	15041	14307	13697	12384	11797	8270	6404	57	494	

* Includes pre-grade I

Source: Government of Newfoundland and Labrador, Department of Education, Annual Report and Statistical Supplement.
Canada Year Book.

TABLE 3-3

RETENTION RATES FOR SELECTED YEARS

	Grade										
	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1949-50	100										
1950-51		94.3									
1951-52	100		91.0								
1952-53		98.3		87.7							
1953-54	100		96.6		82.2						
1954-55		99.0		93.7		75.3					
1955-56	100		97.8		89.4		62.7				
1956-57		98.6		94.7		83.5		63.0			
1957-58	100		96.9		91.1		74.5		38.7		
1958-59		100.5		94.9		86.2		75.5		27.5	
1959-60			101.2		91.7		77.8		48.5		1.2
1960-61				96.5		88.8		77.1		36.9	
1961-62					92.5		80.5		54.5		0.7
1962-63						90.3		80.0		40.2	
1963-64							82.7		53.2		0.5
1964-65								83.3		41.2	
1965-66									58.7		0.3
1966-67										44.7	
1967-68											0.4

Calculated From table 3-2.

becoming more capable of adapting to the economic changes resulting from development.

Another, more simplified way to substantiate this observation would be to consider the change of the percentage distribution of enrolment by grade in the province between 1949-50 and 1967-68.[8] In 1949-50 enrolment in grade II to VI amounted to 53.6% of the total enrolment; this figure fell to 52.1% in 1960-61, and to 48.6% in 1967-68. Grade I is not considered here, but from table 3-2 it will be seen that this grade suffered the greatest percentage decline. This leads to the conclusion that a larger proportion of the student enrolled in the higher grades after completion of the lower ones, and considering that total enrolment increased, it leads to the ultimate conclusion that the standard of education in Newfoundland is rising.

More impressive than the above, is the enrolment at Memorial University of Newfoundland.[9] In 1949-50 the total enrolment was only 307 students; this figure increased to 1,400 in 1960-61, and to 6,045 in 1968-69. The number of graduate students increased from zero in 1953-54 to 219 in 1968-69, although many of the graduate students were not Newfoundlanders.

From the point of view of education alone, it would appear as though the Lewis model is applicable in Newfoundland,

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8 See table 3-2.
9 Memorial University of Newfoundland, Calendar, 1969-70.

as the quality of the labour supply has risen annually. The increased quality of the labour supply is likely to result in more productive use of reproducible capital expenditure as a result of the increased adaptability of the labour supply, and development may follow. Unfortunately the process is not that simple, as the increased quality of the labour supply must affect the level of wages in the economy, and this may contradict the Lewis model. For the moment it will be assumed that the increased quality of the labour supply does not affect the level of wages in the economy; this assumption will be abandoned in the next chapter.

Table 3-4 is used to show the percentage distribution of the educational attainment of the labour force in Newfoundland in 1951 and 1961, and in Canada, Nova Scotia, and New Brunswick in 1961. The table shows that the increased education in the province has had a profound effect on the quality of the labour force. In 1951 only two-thirds of the labour force had an elementary education, whereas in 1961 this figure had fallen to 48%. This means that a greater proportion of the labour force has attained higher levels of education, and therefore that the quality of the labour force has risen. A comparison with Nova Scotia and New Brunswick (which are supposedly more developed provinces than Newfoundland) will show that Newfoundland is not too far behind Nova Scotia, and is ahead of New Brunswick in educational standards of the labour force. In view of the educational attainment of the labour

TABLE 3-4

PERCENTAGE DISTRIBUTION OF THE EDUCATIONAL ATTAINMENT OF THE LABOUR FORCE, NEWFOUNDLAND 1951 and 1961, and CANADA, NOVA SCOTIA, and NEW BRUNSWICK, 1961.

Percentages

	Newfoundland		Canada	Nova Scotia	New Brunswick
	1951	1961	1961	1961	1961
Total	100.0	100.0	100.0	100.0	100.0
Elementary	66.7	48.0	40.5	37.0	50.5
0-4 years	25.7	16.4	6.2	5.3	9.7
5-8 years	41.0	31.6	34.3	31.7	40.8
		#			
Secondary	29.7	45.8	50.8	55.0	42.4
1-2 years	na	23.4	22.6	29.5	20.4
3 years	na	15.8	9.9	14.3	10.6
4-5 years	na	6.6	18.3	11.2	11.4
		*			
Some university.	3.6	4.5	4.5	4.3	4.2
University degree.	na	1.7	4.3	3.7	2.9

Includes 9-12 years of schooling.
* Includes 13 or more years of schooling.
Source: Government of Newfoundland and Labrador, Report of the Royal Commission on the Economic State and Prospects of Newfoundland and Labrador, 1967, page 116.

force in the province, the scope for development does appear to be favourable.

Age Distribution

If adequate educational facilities are made available in an economy, the age distribution of the population is likely to have a marked effect on the quality of the labour supply. Irrespective of the logic of the Lewis model, an economy will not develop unless the population is sufficiently adaptable to facilitate economic change. The population must therefore be sufficiently young to take advantage of whatever educational facilities are available in order to make the most effective use of the growth of capital equipment. It has been mentioned that young people are both adaptable and ambitious, whereas older people tend to be set in their ways and less adaptable. Contrary to this, if the population is too young, then the age distribution may act as a hinderance to development, as there may be too large a population in relation to the size of the labour force. This could result in a low per capita national income, and low per capita expenditures on education. An analysis of the age distribution follows in order to determine the adaptability of the labour supply in the province.

A comparison of the age distribution in Newfoundland with that of the whole of Canada during 1967 shows that Newfoundland had a larger portion of its population below the age

of 25 years.[10] 51.1% of the province's population fell within the 0 to 24 age group, in comparison to 47.7% for the whole of Canada. Canada is a successful developing economy, and if its age distribution is to be regarded as a criterion for its economic success, then it would appear as though Newfoundland also has scope for development, as the difference in the age distribution between Newfoundland and Canada is not significant. However, the 0 to 14 age group in Newfoundland is proportionately much larger than in the whole of Canada. The implication of this observation is that the immediate scope for development in the province is diminished, as a large 0 to 14 age group is likely to present a drain on resources (for education and so forth) in the economy, although the future prospects of economic development would appear to be favourable - if the birth rate declines. Lewis overlooked the importance of the size of this unproductive section of the population, but it is quite possible that the size of the 0 to 14 age group is a cause of Newfoundland's underdeveloped economy, and the present decline of the birth rate in the province may well play an important role in the future development of the province.

Table 2-6 (chapter II) shows that 27.8% of the labour supply in the province was under the age of 25 years in 1961. This is a fairly large portion of the total labour supply in

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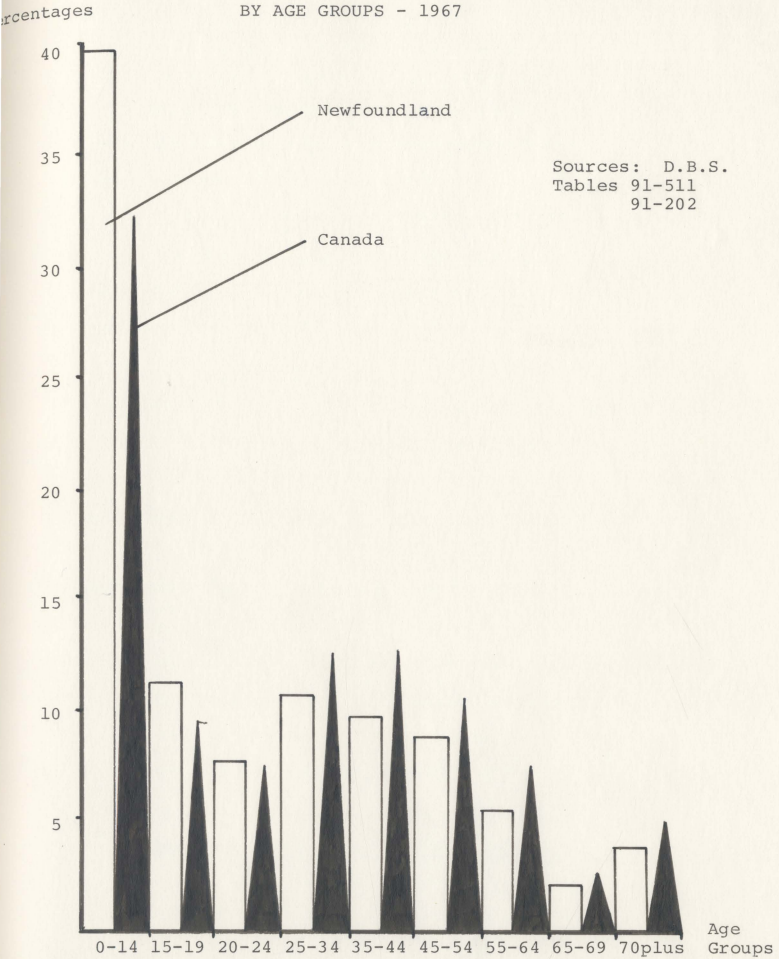
10 See graph 3-1 overleaf.

GRAPH 3-1

POPULATION DISTRIBUTION IN NEWFOUNDLAND AND CANADA

BY AGE GROUPS - 1967



in the province, and is therefore likely to have an important role in the development of the province. This age group may be considered the 'post-Confederation' group, and is likely to have benefitted from the post-Confederation expenditure on education in the province.[11] In addition to this, this group is the most mobile in the province, a quality which is likely to further enhance the prospects of economic development.[12]

The age structure does not contradict the application of the Lewis model in Newfoundland, as it is fortunate that the labour supply is relatively young. However, an analysis of the age structure does point to omissions in the model, and these could be important to the application of the model in another economy where the age structure is not young.

Other Determinants of Productivity

Resettlement Program Revisited

It has been shown that the Resettlement Program may have a profound effect on the future development of the province in the context of the Lewis Growth Model, as the migration of labour to urban areas plays an important role in maintaining

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11 Confederation with the rest of Canada took place in 1949.
12 Table 2-9 in chapter II.

an elastic supply of labour in the industrial sector. There are, however, additional effects which must now be dealt with.

A purpose of the Resettlement Program is to ensure that the younger generation of Newfoundland receives adequate educational training; the migration of families to urban areas may accomplish this. If better educational facilities are made available in the growth centres, then the quality of the future labour supply will improve, and the prospects of development will improve.

The present prospects of economic development are also improved by the migration of labour to urban areas, as a change in environment influences the productivity of labour. If earnings could be used as the criterion of labour productivity, then one is led to believe that environmental change has caused the resettled residents of the outports to become more productive. A survey undertaken by Robb and Robb indicates that between April of 1965 and December of 1967 the earnings of heads of families rose by $124,480, while the earnings of other family members rose by $108,851.[13] This is for a population of 7,252 which was resettled during this period. The improved productivity of the former outport residents has an immediate effect on the development of the province.

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13 A. L. Robb and R. E. Robb, A Cost-Benefit Analysis of the Newfoundland Resettlement Program, Institutes of Social and Economic Research, Memorial University of Newfoundland, St. John's, 1969.

The improved health of the former residents of the outports must also have an immediate effect on productivity. Before resettlement was undertaken, the resident of the outports had to wait for medical practitioners to visit the outports, or they had to travel to the nearest hospitals. No statistics are available concerning the health of these residents, but one may surmise that it has improved generally since the inauguration of the Resettlement Program, as health facilities are an important aspect of the growth centres.

Emigration Revisited

It was concluded in the last chapter that emigration from the province diminishes the labour supply, and therefore places a limitation on the application of the Lewis model to the economy. The effects of emigration are not only numerical, as the overall quality of the labour force is also likely to suffer.

Table 2-4 (see chapter II) shows that approximately 51% of the net migration from Newfoundland consisted of persons between the ages of 15 and 29 years.[14] This portion of the migrant population is likely to have gained the most from the post-Confederation expenditure on educational and health faci-

14 Net migration from Newfoundland means emigration minus immigration.

lities because of their ages, and their departure thus represented a considerable loss to the overall quality of the labour supply in the province.

It appears to be customary for migrants to move from rural areas to urban areas, and then to other provinces in Canada. This implies that the migrants first become productive in the province before they leave, which accentuates the loss to the province in both quality of the labour supply and expenditure on educational facilities.

Educational expenditure does not have an immediate effect on the development of an economy, but it is beneficial in the long-run - if the recipients of the education remain in the economy. Emigration therefore represents a triple loss to the economy i.e. the labour supply diminishes, the quality of the labour supply deteriorates, and educational expenditure is forfeited. Although figures are not available, this observation appears to be especially true for university students in the province. Many university students feel that the present opportunities in the province are insufficient for the amount of study undertaken, and they therefore wish to leave. The loss of university graduates has serious consequences on the prospects of economic development, as they are not only members of the labour supply, but also entrepreneurs of the future labour force. Capital accumulation is undertaken by entrepreneurs, and therefore the departure of future entrepreneurs is even more serious

than is the departure of an equal number of members of the labour supply who are not entrepreneurial material.

Welfare Policy Revisited

In the Lewis Growth Model the productivity of the labour supply in the primary sector has important repercussions on the economic development of the economy if labour income remains constant. High productivity in this sector may benefit the development of the economy if the prices of the produce of this sector declines in proportion to the rise in productivity. A decline in prices should cause incomes to remain constant, and therefore not interfere with the migration of labour to the industrial sector. At the same time the decline in prices of primary produce will raise the real incomes of labour in the industrial sector, and therefore prevent any pressure on the wage level.

On the otherhand, if an increase in productivity in the primary sector is not followed by a sufficient decrease in the price of the produce, or if the produce is not sold on the market, then the increased productivity may be at the expense of economic development. The rise in productivity in the primary sector would then result in a rise in incomes in this sector, and the industrial sector would therefore have to raise the wage level in order to attract labour from the primary

sector. A rise in the wage level has direct repercussions on the level of profits, and a decline in the level of profits leads to a decline in capital investment, which slows down the development process.

With this in mind, we turn to the Government welfare policy and its effects on productivity in the inshore fishery in Newfoundland. In chapter II it was contended that Government transfer payments are partially offsetting labour migration to the industrial sector from the inshore fishery, and that the prospects of economic development are therefore less favourable. It is now contended that transfer payments could have either a beneficial or detrimental effect on the economic development of the province - depending on the marketing of the produce. Transfer payments discourage increased productivity in the inshore fishery, because fishermen are assured of an income during the winter months, and they are therefore not compelled to exert themselves during the fishing season in order to provide for the winter months. The fishermen only need to produce a sufficiently large yield during the fishing season in order to be eligible for unemployment insurance benefits; when the maximum benefit has been attained, there is no incentive to produce more.

At present, the produce of the inshore fishery, which is not consumed in the outports, is mainly for export. If the conditions of eligibility for transfer payments were made more

difficult, or if the maximum benefits were raised so that fishermen would have to be more productive to qualify, then fishermen would probably become more diligent.[15] If the increased production of the fishermen is also exported, then the benefits derived from this increased productivity would accrue to the fishermen and not to labour in the industrial sector, as real incomes in the industrial sector would remain unaltered. An increase in incomes in the inshore fishery may discourage further migration to the industrial sector, resulting in a detrimental effect on the economic development of the economy. However, if the increased production is sold in the economy, the prices of fish would be inclined to decline because of supply conditions. A decline in the price of fish could increase the real incomes of labour in the industrial sector and leave incomes in the inshore fishery unaltered. The effects on the economic development of the province should then be beneficial, as this should discourage any pressure on the wage level in the industrial sector, and should also encourage the migration of labour from the inshore fishery.

Productivity does not only refer to the quantity produced, it could also imply an improvement in the quality of the produce. This is another aspect of the effects of trans-

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15 Increased diligence does not necessarily imply the need for capital investment in this sector - it will be seen that capital investment benefits the development process and disproves the following argument.

fer payments in the inshore fishery, and is also an aspect which was omitted in the Lewis model. The effects of an improvement in the quality of the produce are almost the same as an increase in production to the primary sector, as both may result in a rise in incomes. But whereas an increase in production may lead to a decrease in the price of the produce, leaving incomes in the primary sector unaltered, an improvement in the quality of the produce may lead to an increase in the price of the produce, and therefore an increase in incomes. On the basis of this argument, it would appear as though an improvement in the quality of the produce in the primary sector (if the quantity is left unaltered) is detrimental to the development of an economy, as incomes in the primary sector are likely to decline. If this approach is correct, then it may be concluded that it is fortunate that the welfare policy does not encourage fishermen to improve the quality of their produce. The conditions of transfer payments could quite easily be changed to provide for better quality fish than is produced at present, by making the terms for eligibility more rigid. The price of Newfoundland Cod fluctuates between 2½ and 3½ cents per pound, compared to 7 to 10 cents per pound in Norway.[16]

One of the main reasons for the low price of Newfound-

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16 Brox, page 35.

land Cod is its inadequate quality because of bad handling. If the handling of fish did improve, then we would be led to the odd conclusion that it would be to the detriment of the further economic development of the economy, and therefore to the conclusion that an alteration in the conditions of transfer payments is undesirable. This conclusion is obviously eccentric, as it assumes that economic development can only take place in the industrial sector, and disregards the possibility of economic development through increased productivity in the primary sector. Improved handling of fish requires investment in capital goods; for it could not be undertaken otherwise, and the investment in capital goods has direct implications on the economic development of the economy. However, it was concluded in the introduction that the process of economic development is likely to be less efficient if it is based on primary industries instead of the secondary sector, so that an improvement in the quality of the produce of the primary sector may yet be to the detriment of the economy. We are therefore left with the conclusion that the conditions of transfer payments should not be altered, as they do not contradict the application of the Lewis model in Newfoundland.

It is inconceivable that economic development can be achieved by discouraging increased productivity in the primary sector, and it will therefore be necessary to modify the Lewis model to accomodate a rise in productivity in this

sector. According to the model, labour is induced to migrate to the industrial sector by the prospect of higher wages, which means that the level of wages must be lower in the primary sector than in the industrial sector. A rise in the level of wages in the primary sector (resulting from increased productivity) will slow down the migration to the industrial sector, or will lead to an equal rise in the level of wages in this sector. In either case it will be to the detriment of the economic development of the economy. The Lewis model may be modified to include the possibility of labour being induced to migrate to the industrial sector by the prospect of employment. If productivity does rise in the primary sector, and this does not increase the level of employment in this sector, then it is quite possible that the unemployed members of the labour force in this sector will migrate to the industrial sector in order to attain employment status, irrespective of a rise in the level of wages in the primary sector. A rise in the level of wages in the primary sector may therefore leave the level in the industrial sector unaffected, which means that the level of profits are unaffected, and the development process may therefore continue.

CHAPTER IV: A TEST OF THE PLAUSIBILITY OF THE APPLICATION OF OF THE LEWIS GROWTH MODEL

Most of the conclusions reached in this thesis have favoured the application of the Lewis Growth Model to the economy of Newfoundland, but only a few aspects of the economy have been analysed, and it is therefore possible that further analysis may contradict these conclusions. It was accepted throughout the thesis that a surplus labour force does exist in the province, that productivity is rising in the more productive sectors, and that wage levels have been sufficiently low to allow an increase in profits, but the validity of these assumptions must now be queried.

The Labour Surplus in Newfoundland

One of the major flaws in the Lewis model is that it does not distinguish between the labour force and labour supply. A labour surplus economy means that the labour force outweighs the productive resources of the economy, i.e. that there should be disguised unemployment, or that the level of actual unemployment should exceed the level of frictional unemployment, and therefore that there should not be an upward pressure on the wage rate because of an inelastic supply of labour. The Lewis approach is unrealistic, as it is based on

the labour supply, but an inelastic supply of labour may prevail (because of a relatively small labour force, resulting from a low participation rate) even though there is a surplus labour supply. The level of disguised unemployment or actual unemployment is the criterion for determining whether there is surplus labour in the economy, and this level is determined by the size of the labour force - not the labour supply. A surplus labour supply has obvious implications on the size of the labour force, but these are of little consequence in determining the level of unemployment at any given moment in time. The implications of the labour supply in Newfoundland have already been analysed in chapter II, and the way is therefore clear to determine whether a surplus labour force exists in Newfoundland.

A surplus labour force may exist under conditions of full employment if there is disguised unemployment, but if actual unemployment prevails then it is not necessary to determine the level of disguised unemployment, as it may be concluded immediately that a surplus labour force does exist.[1] It is therefore only necessary to determine whether there is unemployment in the economy, and if so, whether this level exceeds the level of frictional unemployment. Frictional un-

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1 The term 'full employment' generally allows for frictional unemployment.

employment does not generally exceed a level between one and two percent of the labour force.

According to the definition of the labour force in the introduction, members must be 15 years of age or over. Unfortunately, the only available annual statistics require members to be 14 years of age or over. However, the discrepancy in the two definitions is not important, as there are very few 14 year old labourers in the labour force because persons of this age are still being educated.

Table 4-1 shows that between 1954 and 1968 the rate of unemployment fluctuated between 5% and 20%. The obvious conclusion from these statistics is that there is a surplus labour force in Newfoundland, and that the size of the suplus fluctuates between a higher level than 5% and 20% because there is likely to be disguised unemployment amongst the employed labourers. In this respect, conditions are ideal in Newfoundland for the application of the Lewis Growth Model. An indication of the elasticity of the supply of labour (from the labour force) is given by the ease with which employed workers are dismissed in the province.

Graph 4-1 compares the net value of production in the goods producing industries with the level of employment in Newfoundland, and shows that a decrease in the net value of production in 1957 was followed by a decrease in employment the following year. Had there not been an elastic supply

TABLE 4-1

LABOUR STATISTICS IN NEWFOUNDLAND -

EMPLOYMENT AND UNEMPLOYMENT RATES

	Employment Rate *	Unemployment Rate #
1954	93.94	6.06
1955	95.15	4.85
1956	93.46	6.54
1957	89.29	10.71
1958	83.04	16.96
1959	81.74	18.26
1960	82.20	17.80
1961	80.33	19.67
1962	82.54	17.46
1963	85.93	14.07
1964	89.55	10.45
1965	89.47	10.53
1966	91.37	8.63
1967	91.61	8.39
1968	90.28	9.72

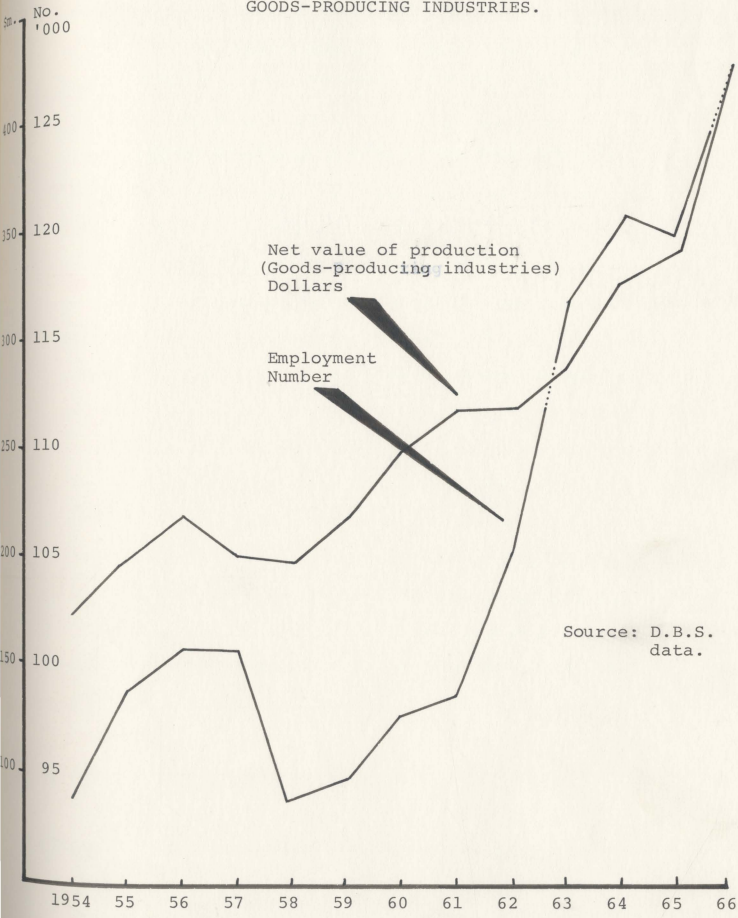
* The number of employed as a percentage of the total labour force.
# The number of unemployed as a percentage of the total labour force.

Source: Calculated from data in D.B.S. Special Surveys Division.

GRAPH 4-1

NET VALUE OF PRODUCTION AND EMPLOYMENT IN NEWFOUNDLAND

GOODS-PRODUCING INDUSTRIES.



of labour, entrepreneurs would have been inclined to maintain the level of employment for fear of not being able to attract these workers back when the demand for the produce of these industries increased. One often reads in the local Evening Telegram of entrepreneurs 'laying off' their employees because of a fall in the demand for their products - sometimes for short durations of time.

It may be considered beneficial to the economic development of an economy if entrepreneurs can dismiss their employees when final demand for their produce declines, for if they are unable to do so, they would have to absorb the cost of maintaining the level of employment, which would lead to a decline in profits and therefore investment. The Lewis model disregards fluctuations in final demand. But fluctuations are inevitable and could disturb the process of development considerably if profits decline or losses are incurred. However, the presence of an elastic supply of labour may offset, to some extent, the effects of these fluctuations. In this respect, the Lewis Growth Model may yet be considered applicable to the economy of Newfoundland.

Productivity in Newfoundland

Lewis suggested that the development process would be accompanied by an increase in the marginal productivity

of labour in the industrial sector, because new capital equipment is technologically advanced and has a direct influence on the productivity of labour. An increase in investment should therefore lead to a more than proportional increase in profits, as, not only are more labourers employed at a low wage level, but labour becomes more productive. In addition, an increase in productivity is labour saving, and therefore prolongs the elasticity of supply, causing the prospects of further development to be favourable. On the otherhand, if labour productivity does not increase, the rate of development may slow down considerably, as profits would increase with an increase in employment, but at a decreasing rate.[2] An analysis therefore follows to determine whether labour productivity has increased in Newfoundland during the past few years.

It is extremely difficult to determine the marginal productivity of labour in an economy, as it would be necessary to compute the productivity of a marginal increase (or decrease) of labourers in every industry in the economy. For this reason, the average productivity of labour will be analysed in order to give an indication of changes in labour productivity in the province.[3]

According to the distribution of the value added in

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2 The argument is based on a downward sloping marginal product curve.

3 The method used to determine labour productivity is described in the introduction.

the goods-producting industries, the three largest industries in 1966 were the mining industry, the manufacturing industry, and the construction industry.[4] The combined statistics of these three industries will be used to give an indication of the rise in average productivity of labour in Newfoundland. The employees refered to are those engaged in the actual production processes, and exclude office workers. Employment and value added refer to the total for the three, and average weekly hours have been calculated by weighting each of the figures for the individual industries with the employment totals of each industry for every year, and thereby attaining averages for the combined industries. In order to compare labour productivity between the various years, value added has been deflated to constant 1961 dollars.

Tables 4-2 and 4-3 show that value added per man-hour rose from $3.41 to $4.77 between 1957 and 1966. This observation is strictly in accordance with the requirements of the Lewis model, but it is a trifle misleading, as value added per man-hour fluctuated between the period under review, and was higher in 1961 and 1964 than in 1966. Lewis did not provide for fluctuations in productivity, but implied that there would be a continual monotonic increase following a continual process of capital formation. However, fluctuations

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4 Value added is defined in the introduction.

TABLE 4-2

NEWFOUNDLAND INDUSTRIAL STATISTICS
MINING, MANUFACTURING & CONSTRUCTION
COMBINED STATISTICS

	Total Employment '000	Av. Weekly Hours (per employee)	Total Weekly Hours '000
1957	20.5	43.89	899.75
1958	18.5	41.61	769.79
1959	18.6	42.25	785.85
1960	18.6	43.63	811.52
1961	19.8	42.95	850.41
1962	21.4	43.85	938.39
1963	22.1	44.15	975.72
1964	22.6	43.87	991.46
1965	25.8	45.11	1,163.84
1966	28.6	45.20	1,293.72
1967	26.2	44.49	1,165.64

	Total Value Added $'000 ($1961)	Total Value Added / Total Employment $1961
1957	159,430	7,777.07
1958	155,308	8,395.03
1959	169,196	9,096.56
1960	188,886	10,155.16
1961	215,679	10,893.88
1962	214,602	10,028.13
1963	223,340	10,105.88
1964	250,615	11,089.16
1965	253,005	9,806.40
1966	320,891	11,219.97
1967		

Source: Calculated from D.B.S., Catalogue numbers: 72-503
36-204
72-201
61-202

TABLE 4-3

NEWFOUNDLAND INDUSTRIAL STATISTICS
MINING, MANUFACTURING & CONSTRUCTION
COMBINED STATISTICS

	Average Man-Hours per Year *	Total Man-Hours per Year #
1957	2,282.28	46,787,000
1958	2,163.72	40,029,080
1959	2,197.00	40,864,200
1960	2,268.76	42,199,040
1961	2,233.40	44,221,320
1962	2,280.20	48,796,280
1963	2,295.80	50,737,440
1964	2,281.24	51,555,920
1965	2,345.72	60,519,680
1966	2,350.40	67,273,440
1967	2,313.48	60,613,280

	Total Value Added / Tot. Man-Hours per year $1961
1957	3.41
1958	3.88
1959	4.14
1960	4.48
1961	4.88
1962	4.40
1963	4.40
1964	4.86
1965	4.18
1966	4.77
1967	

Source: Calculated from table 4-2.

in productivity need not hinder the development process if there is a general upward trend, and table 4-3 shows that this is true for the province. It may therefore be concluded that with respect to the productivity of labour in the industrial sector, the Lewis Growth Model is applicable in Newfoundland.

Wage Levels in Newfoundland

The level of wages in an economy is one of the most important aspects of the Lewis Growth Model, as it determines the level of profits, which in turn determines the level of investment. The level of investment has direct implications on the economic development of the economy, as it sets the limit beyond which production cannot be increased.[5] An increase in the level of wages may therefore hinder the development process if it causes profits to decrease. An attempt will not be made to correlate the level of wages in Newfoundland with the level of profits, as the available statistics are inadequate. Instead, it will be assumed that profits decrease if the increase in hourly wages exceeds the increase value added per man-hour, and visa-versa. The method of analysis to be used will be twofold, i.e. a comparison will first be made with the

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5 Excluding the possibility of increasing production through more efficient allocation of labour.

most developed province in Canada to determine whether wages are indeed low in Newfoundland, and then the increase in wage levels in the province will be compared to the increase in productivity. The statistics of the mining, manufacturing, and construction industries will be used.

Table 4-4

AVERAGE HOURLY EARNINGS*

IN

NEWFOUNDLAND AND ONTARIO

November 1968

	Newfoundland	Ontario
Mining	$3.07	$3.29
Manufacturing	$2.24	$2.79
Construction	$2.35	$3.56

* Current Canadian dollars
Source: Man-Hours and Hourly Earnings, November 1968, D.B.S. 72-003.

Table 4-4 shows that the average hourly earnings are lower in Newfoundland than in Ontario in the three industries mentioned. The discrepancy is more pronounced in manufacturing and construction, which belong to the secondary sector, and at which Lewis directs his development process. On the basis of wage levels alone, it would appear as though there is incentive to direct investment to the secondary sec-

tor of Newfoundland, and in this respect, the Lewis model seems applicable.

Table 4-5 shows that the average hourly wage in the mining, manufacturing, and construction industries (combined) increased annually between 1957 and 1966 at an average rate of 3.24%. The increase in the average hourly wage is contrary to the Lewis assumption that a surplus supply of labour would prevent a rise in the wage level, but does not necessarily detract from the application of the model to Newfoundland.[6] An increase in the wage level may slow the development process down, but need not prevent development as long as the productivity of labour increases at a more rapid rate than the increase in the wage level. It may be seen in table 4-5 that value added per man-hour increased by more than average hourly wages i.e. at an average rate of 7.37%, and therefore that profits were not likely to have declined. We may therefore conclude that although the increase in the wage level may have slowed the development process down in the province, it did not contradict the application of the Lewis model because of an increase in the productivity of labour.

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6 The wage level is determined by the elasticity of supply of labour in the model.

TABLE 4-5

NEWFOUNDLAND INDUSTRIAL STATISTICS
MINING, MANUFACTURING & CONSTRUCTION
COMBINED STATISTICS

	Av. Hourly Wages* $1961	Percentage Increase	Value added per Man-Hour $1961*	Percentage Increase
1957	1.58		3.41	
1958	1.62	2.53	3.88	13.78
1959	1.62	-	4.14	6.70
1960	1.74	7.41	4.48	8.21
1961	1.80	3.45	4.88	8.93
1962	1.83	1.67	4.40	-9.84
1963	1.87	2.19	4.40	-
1964	1.92	2.67	4.86	10.45
1965	1.95	1.56	4.18	13.99
1966	2.10	7.69	4.77	14.11
Average		3.24		7.37
1957-66		32.91		39.88

* Deflated dollars.

Source: Calculated from D.B.S., Catalogue numbers: 72-503
36-204
72-201
61-202

CHAPTER V: SUMMARY AND CONCLUSIONS

The task set in this thesis was to inquire whether the labour supply in Newfoundland meets the requirements of the Lewis Growth Model. For this purpose it was necessary to define 'labour supply' in the broadest possible sense in order to account for both quantitative and qualitative aspects of the Newfoundland labour supply.

A major determinant of the labour supply is population growth, which is dependent on three variables i.e. birth rate, death rate, and net immigration. Although the birth rate began to decline after 1964, it was contended that this does not necessarily contradict the Lewis model. There is a fifteen year lag between changes in the birth rate and changes in the labour supply (according to the definition), and it is therefore possible that improvements in production methods and capital equipment may compensate for this decline. It is therefore possible that within fifteen years the productivity of labour may be rendered sufficiently high to maintain a surplus supply of labour (in terms of the available capital resources) irrespective of a decline in the birth rate. In addition to this, economic development appears to be coupled with a continual decline in the death rate, which also serves to offset the decline in the birth rate.

Net immigration serves to add to the labour supply, and therefore enhances the application of the Lewis model.

However, the opposite was observed in Newfoundland, and it was found that most emigrants were between the ages of 20 and 34 years, i.e. the most productive age. Fortunately the birth rate in Newfoundland is so high that the significance of net emigration is offset. Although net emigration has not been sufficiently high to detract from the applicability of the Lewis model in Newfoundland, considerable amounts have been spent on the education of these emigrants by the Provincial Government, and in this respect economic development has been hindered by the misallocation of investment funds (from a national point of view the opposite conclusion may be reached).

It may therefore be concluded that the three variables which determine population growth enhance the plausibility of the application of the Lewis model in Newfoundland.

Lewis did not consider the labour force participation rate, as he appeared to assume that all labourers belonged to the labour force, whether they were employed or unemployed. But in practice a surplus labour supply does not necessarily imply a surplus labour force, as the participation rate may be low. Two approaches were used to analyse the labour force participation rate in Newfoundland in relation to the Lewis model: the first approach compared the participation rates of various age groups, and the second concerned seasonal and cyclical phenomena.

It was found that although the participation rates

of the 15 to 19 age group and of females above the age of 24 years were low, the participation rate of the 20 to 54 age group was sufficiently high to allow for a surplus labour force in the province. The Lewis model merely requires that there should be surplus labour in the economy, and in this respect the Newfoundland economy complies with the requirement.

But Newfoundland is a resource-based economy, so that seasonal changes are likely to cause fluctuations in the labour force participation rate. Although seasonal changes do not affect the size of the labour supply, with the exception of minor fluctuations in the birth rate, the death rate, and the rate of net immigration, it was observed that the effect on the labour force is profound. A decline in the size of the labour force during winter may cause an upward pressure on the wage level in the economy, and may therefore detract from the applicability of the Lewis model in the province. But even if wage increases are irrevocable, real wages may fall during summer, so that the Lewis model may be modified to envisage spurts of development during the summer months and slackening periods during the winter months.

Cyclical phenomena are essentially beyond the scope of this thesis, as Newfoundland is highly dependent on events in the North American continent, and yet only a very small part of it.

In addition to labour force participation, labour mobility is an important determinant of the elasticity of supply

supply of labour in the industrial sector. According to the Lewis model, it is necessary for labour to be mobile in order to prevent an upward pressure on the wage rates in the industrial sector. In addition, the labour left behind in the primary sector, i.e. the fishery in Newfoundland, should become more productive and commercially orientated in order to support the shift to the industrial sector. It was found that there has been a considerable shift of primary labour to urban areas in the province, and that this process was partly attributed to the Manpower Mobility Program and the Household Resettlement Program. These programs have played an important role in aiding residents of the outports to move to urban areas by paying the costs of migration, but are being offset by government transfer payments. Government transfer payments appear to enable the residents of outports to remain in these rural areas, and also appear to discourage increased productivity of inshore fishermen. However, there is a gradual movement to urban areas, and there is a tendency to develop the offshore fishery (which is more productive than the inshore fishery), so that the Lewis model is not contradicted by events in the primary sector.

It may therefore be concluded that the quantitative aspects of the labour supply are in accordance with the requirements of the Lewis Growth Model, and we may now turn to the qualitative aspects.

The qualitative aspects of the labour supply refer to the productivity of labour, which plays an important role in the Lewis model. Chapter III was used to inquire whether the labour supply of Newfoundland has indeed become more productive in order to support the application of the Lewis model in the province. There are naturally a host of determinants of labour productivity, but because of the lack of adequate data, only education, age distribution, the Resettlement program, emigration, and the government welfare policy were analysed.

It was found that educational standards have improved considerably since 1949, and it was therefore concluded that the productivity of Newfoundland labourers has naturally increased.

The age distribution plays an imprtant role in the economic development of an economy, as it determines the adaptability of the population to economic change. During the development process the economy undergoes many changes, and it is therefore necessary that the population be sufficiently adaptable to facilitate these changes. The younger the population, the more adaptable, and in this respect Newfoundland is not lacking. However, if the population is too young, it could present a hinderance to the process of economic development, as a sizable portion of the financial resources must then be spent on education instead of reproducible capital equipment.

It was found that a fairly large portion of the Newfoundland population is under the age of 15 years, which implies that this age group is likely to present a drain on financial resources, although the future prospects of economic development would appear to be favourable. However, it was observed in chapter II that the birth rate is declining, which implies that the population is becoming less bottom-heavy (i.e. older), so that the drain on financial resources should become less of a hinderance to economic development annually.

The Resettlement Program appears to play a fairly important role in the quality of the labour supply of Newfoundland, as it enables the children of the former residents of the outports to attain a better education than they might have otherwise received. A change in environment from a less productive to a more productive environment is likely to render labour more productive, and the availability of health facilities is likely to prevent absenteeism and increase productivity. The Resettlement Program therefore appears to enhance the plausibility of the application of the Lewis Growth Model in Newfoundland.

On the otherhand, it was found that emigration from Newfoundland does not only detract from the labour supply, but also from the quality of the labour supply. It was shown that the majority of the emigrants were between the ages of 15 and 29 years. This age group gained the most from the post-Confederation expenditure on education, and are therefore

likely to be productive members of the labour supply. In addition, it was concluded that these emigrants migrated from urban areas in the province, and were therefore likely to have been relatively productive prior to their departure. In this respect, the application of the Lewis model is contradicted, but fortunately the numerical size of net emigration does not present a hinderance to the economic development of the province.

It was contended that the government welfare policy discourages labour productivity in the fishery, and therefore acts as a hinderance to the economic development of the province in the context of the Lewis Growth Model. In order to facilitate the application of the Lewis model it is therefore necessary that the method of transfer payments be altered in order to encourage increased productivity in the inshore fishery.

It may therefore be concluded that the qualitative aspects of the Newfoundland labour supply do not contradict the application of the Lewis model with the exception of the government welfare policy.

Throughout the thesis it was assumed that a surplus labour force does exist in the province, that productivity is rising in the more productive sectors, and that wage levels have been sufficiently low to allow an increase in profits. Chapter IV was used to substantiate these assumptions. It was

concluded that not only is there unemployment in the province, thus indicating a surplus labour force in terms of the available capital resources, but the level of unemployment is sufficiently high to make the application of the Lewis model plausible in Newfoundland.

A combination of the statistics of the mining, manufacturing, and construction industries were used to give an indication of the growth of productivity in the more productive sectors of the economy. The statistics were deflated in order to compare productivity during the various years, and it was concluded that productivity had indeed risen, thus enhancing the plausibility of the application of the Lewis model.

It was not possible to determine whether the level of wages in Newfoundland is sufficiently low to allow an increase in profits, as adequate data was not available. But an alternate method was used whereby the levels of wages in the mining, manufacturing, and construction industries were compared to the levels of wages in the same industries in Ontario in order to determine whether wages are indeed low in Newfoundland. Thereafter, the increase in wage levels was compared to the increase in productivity, to determine whether the prospects of increases in profits were favourable. The affirmative conclusion was reached.

The conclusions reached have generally pointed to a potentially successful application of the model in the pro-

vince, for neither the quantitative nor the qualitative dimensions of the labour supply contradict the groundrules of the model.

It might have been more appropriate to analyse the workings of the model in Newfoundland, for the basic relationships postulated by Lewis need not necessarily conform to reality, even if his requirements do. We have seen that the model may be modified to embrace conditions in Newfoundland, and should therefore conclude that the model is applicable in the province, but an analysis of the workings of the model may require changes which alter the model instead of modifying it. The appendix is used for this purpose.

It may therefore be generally concluded that the labour supply in Newfoundland enhances the plausibility of the application of the Lewis Growth Model, but that the workings of the model should first be analysed before the model is actually applied to the economy.

APPENDIX: THE VALIDITY OF THE LEWIS GROWTH MODEL

The purpose of this thesis was to inquire whether the Lewis Growth Model may be applied to the economy of Newfoundland, and not to test the validity of the model itself. But the findings of the thesis are inconsequential if it is determined that the model is invalid, and a brief digression on the validity of the Lewis model might be desirable.

The Importance of the Level of Wages

Lewis based his entire model on a low level of wages, but is this realistic? In the initial stages of development the level of wages is supposed to be the incentive for industry to be established in the economy, as the prospects of earning high profits are supposedly favourable. The level of wages may be a consideration which entrepreneurs take into account when deciding where to establish their industries, but it is not the only consideration, and not necessarily the most important one (contrary to what Lewis would have his readers believe). A low level of wages does not necessarily imply that the prospects of earning high profits are favourable; the criterion may be the skills of the available labour force, the presence of related industries, the distance from an effective market, the availability of transportation facilities, or a host of

other criteria which may not be met in an underdeveloped economy. In Newfoundland, for instance, a foreign entrepreneur may be tempted to establish an industry by the availability of deep harbours, cheap land, government subsidies, the distance from his European market, the availability of unemployed labour (rather than its price), the abundance of natural resources, and so forth. The wage level in the province may be only a minor consideration.

Even if the level of wages does prove to be the incentive for industry to establish in the economy, development need not be achieved. A low level of wages does not imply that the wage bill will be low, as it is possible that labour may be inefficient. Table A-1 is used to show that although the average hourly earnings of labour in the manufacturing industry in Newfoundland is comparatively low, wages are a relatively large percentage of the value of shipments.

TABLE A-1

LABOUR EFFICIENCY IN MANUFACTURING IN NEWFOUNDLAND, QUEBEC, ONTARIO, AND BRITISH COLUMBIA - 1966

(Manufacturing Activity)

	Nfld.	Qu.	Ont.	B.C.
Average hourly earnings	$1.86	$2.00	$2.36	$2.74
Value added per man-hour	$4.50	$5.92	$7.02	$7.21
Wages as a % of value of shipments	19.84%	15.20%	14.97%	16.68

Source: Manufacturing Industries of Canada, D.B.S. 31-203.

The table shows that although average hourly earnings are lower in Newfoundland than in the three more developed economies (Quebec, Ontario, and British Columbia), the value added per man-hour is also lower, and wages are a larger percentage of the value of shipments. From chapter IV we know that labour productivity has risen in Newfoundland, but it can now be seen that productivity has not necessarily risen sufficiently to give impetus to the development process. The development process is dependent on the efficiency of production, and not on the level of wages, as profits may be low irrespective of a low level of wages. Lewis make the mistake of considering the wage level rather than the wage bill, but the wage bill may be comparatively high even though there is a surplus supply of labour in the economy. It may therefore be concluded that although the requirements of the Lewis model may render it applicable to the economy of Newfoundland, the model may be invalidated if the productivity of labour is not sufficiently high to cause the wage bill to be low, or by any other criteria which affect the level of profits (eg. the distance of the industry from an effective market).

The Concept of a Closed Economy

The workings of the Lewis Growth Model are highly dependent on the assumption of a closed economy, but the prac-

ticality of such an assumption is questionable. The essence of the model is that investment funds are generated within the economy because of high profits resulting from a low wage level (because of the elasticity of the supply of labour). But if the economy is not closed, entrepreneurs may be inclined to invest their profits in developed incomies, as industries in these economies are likely to have attained economies of scale, and are therefore likely to be more profitable. It is also important for the economy to be closed (in the model) to prevent the likelihood of emigration of the surplus supply of labour or competition from foreign industries which have attained economies of scale.

But an economy is never really closed, as trade must take place in order to alleviate the productive limitations created by geographic location, and it is improbable that an underdeveloped economy will abound in entrepreneurship or have sufficient investment funds to undertake its own development. Lewis presupposed adequate entrepreneurship and wealth for the initial stages of development of his surplus labour economy.

It is common for underdeveloped economies to encourage foreign investment, but this implies that the profits earned from such investment accrue to the investors, and therefore that they are not necessarily reinvested within the economies. Obviously the increase in incomes as a result of the employment opportunities created by foreign investment is beneficial to

the economy (in terms of the increased purchasing power of individuals), and may even encourage further investment which may ultimately lead to development, but this is a departure from the Lewis model - not a modification of the model itself.

Newfoundland is not a closed economy, and because of this, much of its industrial sector is owned by foreign companies.[1] One of the major complaints in the province is that there is an outflow of profits, resulting in a shortage of investment funds which are needed for further development. Often the Provincial Government undertakes to underwrite and subsidize industrial projects in order to provide the incentive for investment or merely to attract foreign entrepreneurship. But this is contrary to the workings of the Lewis model, which provides for a natural process of capital formation. While the province may meet the requirements of the model in most instances, it does not follow the workings of the model because it is not a closed economy.

The Role of Profits

According to the Lewis Growth Model, profits are the source of investment funds. If wages are low because of an elastic supply of labour, then profits are supposed to increase, and development may therefore follow from the investment of retained earnings. But in the real world profits are only a

1 The term 'foreign' is used to include companies in other Canadian provinces.

minor share of the total investment funds; credit financing is one of the most important sources, particularly external financial resources.

But if credit is one of the most important sources of investment funds, the Lewis model may be invalidated, as the level of interest rates may supercede the importance of the level of wages. Development may still be achieved though credit financing, but not necessarily according to the workings of the Lewis model. Profits do play an important role, as they provide the incentive for industry to establish, and are used to repay loans. But in the Lewis model profits must be sufficiently high to sustain a rapid development process, whereas in practice they need only be competitive to attract investment funds if external sources of capital are available. Profits are the cause of economic development in the model, and the level of these profits determine the rate of economic development. But where profits do not play a major role in capital accumulation, they are only the incentive for development, and their level has only an indirect influence on the rate of investment.

Determinants of the Wage Level

The elasticity of the supply of labour is regarded as the determinant of the level of wages in the Lewis model,

and is therefore the reason for a low and constant wage level in a labour surplus economy. But this approach has only the dimension of quantity, and excludes the possibility of a rise in the wage level following an improvement in the quality of the labour force. It is possible that the wage level may rise, even with a surplus labour force, if the quality of the labour improves. Economic development is synonymous with a general improvement in educational facilities, and therefore results in a more highly skilled labour force; this means that there is likely to be an upward pressure on the wage level, as more labourers begin to earn higher wages. High wages may be desirable for social and economic reasons. They may cause spreader effects that promote internal development of the economy. Although profits need not be too high, they may still be competitive, which is sufficient for development if the economy is open, as they attract external capital funds.

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